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ABSTRACT

Recent literature on the changing staffing requirements for registered nurses and the factors affecting those requirements is cited in this annotated bibliography that comprises the ninth volume in the Nurse Planning Information Series. A broad concept of staffing is employed and includes information useful to both managers within individual institutions and to health planners concerned with community, county, or state institutions. Abstracts of the literature are grouped according to the following categories: hospital inpatient and hospital outpatient settings; long-term care settings; models and strategies, and economic studies of staffing methodologies; regional, state, and national studies of needs and requirements; and bibliographies and summaries. (JD)

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Nurse Planning Information Series

9

Nurse Staffing Requirements and Related Topics: A Selected Bibliography

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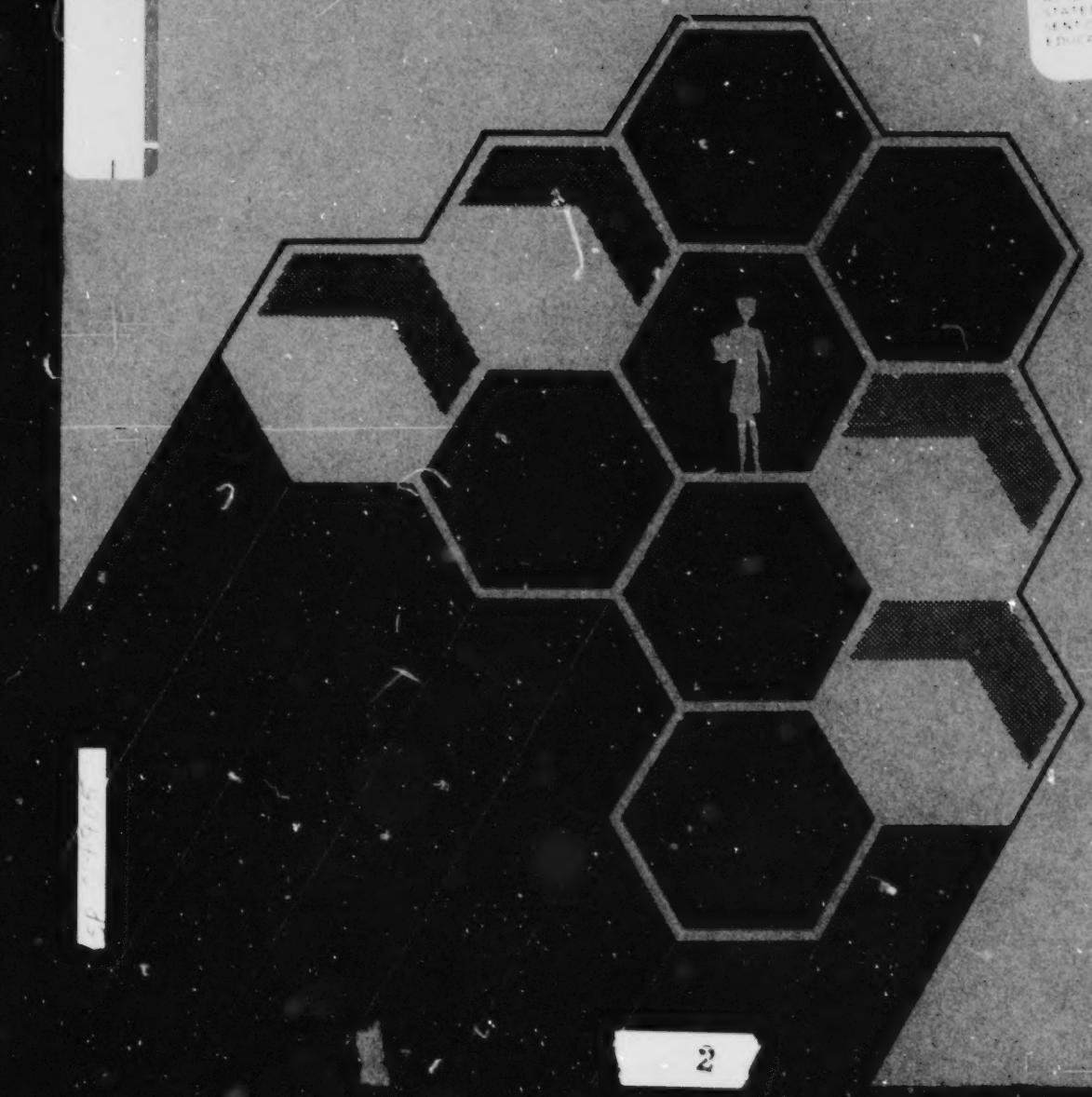

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2

The Nurse Planning Information Series, sponsored by the Division of Nursing in the Bureau of Health Manpower, has been designated as a special series to support health manpower planning and specifically to meet the information needs of the nursing component of the National health Planning Information Center.

Three other series published by the Center are Health Planning Methods and Technology, Health Planning Information, and Health Planning Bibliography. All of these were designed to respond to information needs of the Bureau of Health Planning.

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No. 5 Nurse Practitioners and the Expanded Role of the Nurse: A Bibliography

No. 6 Comparative Analysis of Four Manpower Nursing Requirements Models

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No. 8 Relationship Between Nursing Education and Performance: A Critical Review

Nurse Staffing Requirements and Related Topics: A Selected Bibliography

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Division of Nursing
Hyattsville, Maryland 20782

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FOREWORD

This selected bibliography was developed to provide the nursing community an updated compilation of recent literature on the changing staffing requirements for registered nurses and the factors affecting those requirements. It will help meet the needs of health planners in determining the most efficient use of available nursing skills, and will be of value to nursing educators in planning future educational programs in nursing.

This is the ninth volume in the Nurse Planning Information Series. The series is composed of several selected monographs and bibliographies relevant to health planning. The other volumes are listed on the inside front cover.

The nursing component of the National Health Planning Information Center provides health planners with a centralized, comprehensive source of information on nurse manpower planning to facilitate an improved health care delivery system in the United States. The component acquires, screens, synthesizes, disseminates, and makes available specialized documentary material on nursing, as well as methodological information on a wide variety of topics relevant to health planning and resources development.

Jessie M. Scott
Assistant Surgeon General
Director
Division of Nursing

CONTENTS

	FOREWORD	iii
	INTRODUCTION	vii
I.	SETTINGS: HOSPITAL INPATIENT	1
II.	SETTINGS: HOSPITAL OUTPATIENT	49
III.	LONG TERM CARE SETTINGS	53
IV.	STAFFING METHODOLOGIES: MODELS AND STRATEGIES	73
V.	STAFFING METHODOLOGIES: ECONOMIC STUDIES	121
VI.	NEEDS AND REQUIREMENTS: REGIONAL, STATE, AND NATIONAL STUDIES	157
VII.	BIBLIOGRAPHIES AND SUMMARIES	199
	AUTHOR INDEX	211
	ADDENDUM	219

INTRODUCTION

The issue of greatest concern to managers of nursing services is, undoubtedly, staffing the organization, deployment, and utilization of nursing personnel within a health care agency in the most efficient and effective way. In the past few years this issue has become even more prominent as ways are being sought to contain the rapid rise in health care costs. Since nursing personnel are often the single largest group of workers within a health care agency, the appropriate management of staffing is seen as a key factor in promoting cost effectiveness.

The appearance of this bibliography is thus a very timely one, bringing together in one place the recent staffing literature. This includes results of research on staffing, case studies, staffing guidelines, and philosophical discussions. The bibliography contained here supplements and updates the various state-of-the-art and critical reviews of the nurse staffing literature that have appeared since 1970.

The concept of staffing as employed in this bibliography is a broad one. Material is presented that could at one level be of interest and use to managers within individual institutions and at another level to health planners concerned with all institutions making up an entire community, a county or a state. The abstracts are grouped so as to facilitate location of material according to the interest of the reader as follows:

- Settings: Hospital Inpatient
- Settings: Hospital Outpatient
- Long Term Care Settings
- Staffing Methodologies: Models and Strategies
- Staffing Methodologies: Economic Studies
- Needs and Requirements: Regional, State, and National Studies

o Bibliographies and Summaries

Among the uses of this bibliography is the uncovering of gaps in the literature on nurse staffing. It is anticipated that the publication of this bibliography will stimulate efforts to close some of these gaps.

How To Obtain Documents

All citations to documents, whether published or unpublished, contain source availability information. For each reference, this information is noted in the citation after the document title.

The availability source for articles published in journals and other periodicals is the name of the journal noted after the statement "Pub. in...." Issue information (volume, number, etc.) and page numbers are included. To obtain copies of the journal article cited, consult a local university librarian or contact the librarian in your Regional Medical Library, where many of the journals can be found.

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Questions concerning the development of this bibliography should be addressed to:

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Additional copies of this bibliography may be purchased from:

National Technical Information Service (NTIS)
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I. SETTINGS: HOSPITAL INPATIENT

Alabama Council of Directors of Nursing Service.
Current R. N. Staffing Problems in Alabama Hospitals.
13p 1975 Available NTIS HRP-0000440/8

The report is concerned with the status of foreign trained RN's, as it relates to the current nursing personnel shortage in Alabama Hospitals. It includes survey data on the attitudes in various hospitals toward the hiring of foreign nurses, together with a sample of the questionnaire circulated. Two major problems were noted, including the intelligibility of telephone communications, and the difficulty foreign personnel were having in obtaining licenses and/or extending temporary permits. It was found that general nursing shortages were usually due to the nursing staff's willingness to work only day shifts or weekdays and to ineffective recruitment methods. In contrast, foreign nurses seem to provide relatively outstanding service whenever utilized. (NTIS)

Alabama Regional Medical Program, Birmingham.
Planning Guide for Coronary Care Units.
34p Jan 70 Available NTIS HRP-0003960

The process of planning a coronary care unit for a general hospital is described, with emphasis on the following considerations: need for such a unit, scope of care to be provided, criteria for selection of patients, services to be made available, personnel required, special skills of personnel, equipment needs, and accommodation of these elements in an efficient clinical and architectural program within the hospital's means. A summary checklist outlines suggested steps in establishing a coronary care program. The following general elements of operation and design are discussed: staffing (medical and nursing); legal implications of the nurses' role in the coronary care unit; physical design of the unit (location, size, finishes, etc.); and monitoring equipment (design and operation). Appendices include a list of organizations in Alabama which offer consultative services; an outline of financial considerations; a budget for a hypothetical two-bed coronary care unit; a sample disclaimer form stating conditions of admission to a coronary care unit; a diagram of isolated

electrical systems for coronary and intensive care units; and a bibliography.

American Nurses' Association, Kansas City, Mo.
Nursing Staff Requirements for In-Patient Health Care Services.
11p 1977 Available from American Nurses' Association, Inc., 2420 Pershing Road, Kansas City, MO 64108.

Nursing staff requirements for inpatient hospital care are the subject of a booklet produced by the Executive Committee of the Council of Nursing Service Facilitators in response to a request from the American Nurses' Association Commission on Nursing Services. Following a brief introduction, which takes note of some of the questions that administrators and staff nurses must consider in development of a staffing program, a program of staffing is described. The description includes a list of the elements of a coherent staffing program, such as a written statement of the nursing program's purpose, philosophy, and objectives and an identification of the data base. The characteristics of a staffing program, which are comprised of the elements, are then outlined. Four general types of staffing methodology are discussed: descriptive methodology; industrial engineering methodology; management engineering methodology; and operations research. Other topics covered include selection of a staffing methodology; proposed criteria for evaluation of a staffing program; and steps in establishing a staffing program. It is emphasized that care must be taken to choose a staffing methodology that is most easily adapted to the specific setting.

Auld M. G
How Many Nurses. A Method of Estimating the Requisite Nursing Establishment for a Hospital.
Pub. in Nursing Times v73 n31, suppl 108, 4 Aug 77.

Aure Beverly, Schneider Jack M
Wisconsin Univ. - Madison. School of Nursing.
Transforming a Community Hospital Nursing Service into a Regional Center.
Pub. in Nursing Clinics of North America v10 n2 Jun 75.

The development of a community hospital into a regional perinatal center and the impact of the changes on the hospital's nursing staff are described. The perinatal center is unique among regional centers in Wisconsin in that it is a university service combined with community hospitals. Representatives of nursing service, nursing educators, administrators, and physicians from two community hospitals

and from the University of Wisconsin participated in negotiations that resulted in a merger of the neonatal and fetal - maternal components and personnel of the community and University hospitals into a perinatal center located at one of the community hospitals. Additional nursing personnel for the center were to include nurse clinicians and a master's - prepared nursing coordinator, assistant director, and clinical nurse specialists, all of whom would be funded by both community hospitals and superimposed on the traditional nursing service. The primary objective of the clinical nurse specialists and nurse clinicians was to provide service and education to consumers and health professionals in the center and in the region. The community hospital housing the university obstetric service and the administration of the maternal - fetal component of the center are described, with particular attention to cooperation between nurses and physicians in the development of the service and on new nursing roles that evolved. It is noted that the transition was based on the premise that nursing is the keystone of successful patient outcomes and is on a peer level with medicine.

Barrett James P, Barnum Ronald A, Gordon Benjamin B, Pesut Robert N
Battelle Memorial Inst., Columbus, Ohio.
Evaluation of the Implementation of a Medical Information System in a General Community Hospital.
342p 19 Dec 75 Available NTIS PB-248 340/2

The report evaluates the impact of the Technicon Medical Information System (TMIS) on El Camino Hospital (ECH) in Mountain View, California, over a three year period. A comprehensive report of the cost-benefits of the system at ECH will be available in mid 1976. The major objective was to evaluate the impact of TMIS on the organization and administration of health care delivery at ECH. An analysis of staffing patterns is presented first followed by nursing activity analysis and studies on direct use of the system by the medical staff. Finally, special studies consider the performance of TMIS and its impact on ancillary and support services. Appendices present background information, including a description of the system, various questionnaires used on the ECH staff, a discussion of the background, and a description of the implementation process of the system at ECH. (NTIS)

Berry D. M
An Inpatient Classification System for Nursing Service Staffing Decisions.
Pub. in Communicating Nursing Research v8 p90-100 Mar 77.

Bihldorff J. P, McPhail A, Payne R, Scanlon R
McMaster Univ., Hamilton (Ontario). Medical Centre.
Approach to Patient Classification -- And Some Results.
Pub. in Hospital Administration in Canada v18 n2 p22-25 Feb 76.

Steps in the application of patient classification systems are outlined after a brief review of the literature. Four steps in the implementation of an effective patient classification are identified -- (1) establishing objectives to be pursued in a hospital as they relate to staffing management; (2) adopting a systems approach in consultation with nursing and according to nursing direction; (3) accepting fundamental principles of patient classification and implementing a patient classification system according to these guidelines; and (4) evaluating the functioning of a system and its contribution to the achievement of objectives on an ongoing basis. The development of a patient classification system at the McMaster University Medical Centre in Hamilton, Ontario, Canada is detailed. It is pointed out that a close working relationship among nursing, systems engineering, and other clinical service administrative representatives has been maintained throughout the design and implementation stages of the center's patient classification system. Different values are used to determine the level of care needed on each ward, based on the observation and measurement of actual nursing practices. The benefits of the system are delineated, with emphasis on frequent evaluation of staffing according to the needs of patients.

Boyarski Robert Philip
Mercy Medical Center, Dubuque, Iowa.
Nursing Workweek Equalizes Shifts, Time Off.
Pub. in Hospital Progress v57 n7 p36,37,40,45 Jul 76.

The Division of Nursing at Mercy Medical Center in Dubuque, Iowa, has rescheduled its workweek resulting in improved employee morale and decreased turnover rates. Under the new schedule, total hours worked in a 2-week pay period were reduced to 70 (seven 10-hour shifts). Part of the staff was then placed in a group working Tuesday, Wednesday, Saturday, Sunday, Monday, Thursday, and Friday, while another group worked the opposite days. Overtime requirements were changed. In order to compensate for any loss in gross pay, hourly rates were increased. At the end of the 3-month trial period, it was found that only 9 percent of the employees were dissatisfied with the system, all of them part-time employees whose schedules had been changed so that they were working the same schedules as the full-time personnel (i.e., seven 5-hour shifts instead of the previous four or five 8-hour shifts). Eighteen months after initiation of the

project, all units in the Division of Nursing were following the rescheduled workweek. The benefits to the hospital have included a 26 percent reduction in employee turnover, a reduction in nursing care hours and in overtime hours, and better employee morale. Employees were insured every other weekend off, with no split days and knowledge of days off in advance. Moreover, there was a reduction in the actual workweek with no reduction in pay. A survey of employee attitudes revealed that registered nurses were particularly happy with the rescheduled workweek.

Brayton James B
Johns Hopkins Univ., Baltimore, Md. Dept. of Pediatrics.
Simulation of Alternate Pediatric Hospital Care Units. Volume III.
276p 1975 Available NTIS HRP-0009703

Volume III of a report on the simulation of pediatric hospital care units contains users manuals for the computer programs involved in the simulation. Instructions for and listings of computer programs developed to perform the care unit loading part of the simulation and ancillary functions are presented. Included are programs for preparing input data required for the care unit loading and the services and staffing parts of the simulation, as described in Volume I. The programs are written primarily in UNIVAC's Fortran V language. The services and staffing program is a modification of a nursing home simulation program, altered to accept daily changes in census of units and schedule of patient demands. Input and analysis procedures are fully documented. Logic flow charts, examples of computer deck setups, and other illustrations are included. Portions of this document are not fully legible.

Bryant Sandra
Corometrics Medical Systems, Inc., Los Angeles, Calif.
Nursing Aspects and Organization for Perinatal Care.
Pub. in Clinics in Perinatology v3 n2 p493-496 Sep 76.

Guidelines are presented for the implementation of fetal intensive care nursing within a community hospital. Optimal care for all obstetrical patients cannot be insured unless they receive high-risk antepartum, intrapartum, and postpartum care. Six factors to consider in the implementation of quality fetal intensive care nursing are outlined: (1) number of deliveries per month; (2) socioeconomic and demographic factors; (3) categories or levels and the number of nurses to be trained; (4) cost and available time for training and ongoing education; (5) responsibilities and duties of each category or level of nursing; and (6) variations in the delivery of care by

board-certified obstetricians, general practitioners, and osteopathic physicians. Functions of the nursing care team include the admission of a patient to a unit, the application of fetal monitors and an assessment of data, care of a mother in delivery, care of an infant at delivery, postpartum recovery of a mother, type and number of operative procedures done on a unit other than vaginal deliveries, cleaning and wrapping of instruments, patient teaching, staff development and education, and antepartum assessment. Staffing assignments and procedural aspects of fetal intensive care nursing are detailed. The importance of understanding the concepts of obstetrical care in providing continuity in specialized care through comprehensive nursing care plans is discussed.

Bueker Kathleen, Sainato Helen K
Saint Elizabeth's Hospital, Washington, D.C.
Study of Staffing Patterns in Psychiatric Nursing.
115p 1968 Available NTIS HRP-0006611

Findings of a study of the effects of selected combinations of nursing staff with prescribed functions upon the therapeutic milieu and nursing care of patients in a psychiatric hospital are reported in an investigation undertaken by research nurses at Saint Elizabeth's Hospital, Washington, D.C. Two male and two female wards of 46 to 50 patients each were selected from four continued treatment services of the hospital. The 24-month study was conducted in three phases: baseline, introduction of nursing staff, and manipulation of staff. Major variables in the design included: graduate nurse leadership; programming for therapeutic care; addition of a ward clerk; and alternate introduction of extra staff, including one supervisory nursing assistant and one inexperienced staff nurse. The effects of the program -- nurse leadership upon the functioning of personnel, and nursing care upon the ward milieu and behavior of patients -- were evaluated every 13 weeks on the experimental wards and compared with control wards every 26 weeks. Findings indicate that a selected combination of ten nursing staff with functions prescribed by a graduate nurse, along with the services of a ward clerk and participation from the ward physician, increased the effectiveness of the ward milieu and improved the treatment program for patients. Comparison with control wards substantiated the finding that traditional staffing patterns and remote supervision by professional personnel maintain the status quo and custodial patient care. Study methodology and findings are reported in detail. Supporting documents are appended.

Bureau of Health Resources Development, Bethesda, Md. Div. of Nursing.
Nursing Personnel in Hospitals: 1972 Public Health Service Survey. Health Manpower References.
377p Dec 74 Available NTIS PB-239 475/7

The report presents the results of the 1972 survey of nursing personnel employed in hospitals not registered with the American Hospital Association, which was conducted by the National Center for Health Statistics for the Division of Nursing. The tables in the report present projected data on the number of nursing personnel employed in these hospitals during the period November 5 through November 11, 1972. Data from 520 hospitals were used in making the projections. Each table shows the number of nurses in a particular personnel category by type and ownership of hospital. State summary tables also appear in this report. They show the distribution of nursing personnel in hospitals by type, ownership, size, and geographic location of hospital. Nursing personnel are enumerated according to category of position, full- and part-time status, and the area in the hospital to which they are assigned. The report is intended for use as a source book on nursing manpower in non-AHA-registered hospitals. (NTIS)

Callon Helen F
Wisconsin Perinatal Program, Madison.
Regionalizing Perinatal Care in Wisconsin.
Pub. in Nursing Clinics of North America v10 n2 p263-274 Jun 75.

The impact of regionalization of perinatal care in Wisconsin is described in an article that summarizes efforts to lower the neonate mortality rate. The perinatal team concept began with a team consisting of a neonatologist and a maternal / child health nurse. Preliminary study of vital statistics revealed much about advances in medicine, hospital delivery, and birth control. Under a grant from the Wisconsin Bureau of Maternal and Child Health, medical students visited 30 of the largest hospitals to compile information on infant birth, prematurity, neonatal death, and fetal death. This study indicated that one-third of neonatal deaths were preventable in hospital of birth, one-third were preventable in a high-risk center, and one-third were not preventable with present knowledge. After opening high-risk neonatal nurseries, the two medical schools visited each hospital to survey resources and make recommendations. Professional educational activities were initiated including one-day institutes for physicians and nurses. Standards for proposed additional perinatal centers specified staffing (number and type of physicians, nurses, and other health professionals; transportation team), extra facilities (maternal intensive

care (ICU) high-risk clinic, intrapartum ICU, neonatal ICU, laboratories, followup clinics, communication system); data collection; peer review system; consultation practices; and education. Eight high-risk nurseries were established. The Wisconsin Association for Perinatal Care was established and has educational activities. Neonatal deaths have steadily declined, with the largest decline in deaths at 0-24 hours.

Coggeshall John H
Belleville Area Coll., Ill.
Management of Retirement Homes and Long-Term Care Facilities. 200p 1973 Available from C.V. Mosby Co., 11830 Westline Industrial Dr., St. Louis, MO 63141.

The administration and management of long-term care facilities and retirement homes are discussed in a book designed to help those entering this field. A chapter on organizational structures and the responsibilities of ownership describes three basic kinds of ownership: ownership vested in a fraternal group, governmental ownership, and proprietary ownership. The role of the administrator in management is discussed in terms of planning, organizing, directing, controlling, and staffing. An investigation of the organization and administration of the facility centers on the departments and work efforts and the administrative services such as policies and procedures. Contracting for services, housekeeping, mechanical and grounds maintenance, building maintenance, laundry, food, fire safety, and building security are discussed in a section on residential services. The topics considered in the chapter on health services include: the health office in the retirement residence; the nursing department in the nursing home or home for the aged; pharmacy services; the medical advisory committee and medical director; medical records; and auxiliary health needs. An analysis of the necessity of social services is made, and the relationship of the retirement home to the community is explored. The rules and regulations of a retirement community and the bylaws of a residents' association are appended. References are included and the text is indexed.

Comprehensive Health Planning Agency of Southeastern Wisconsin, Inc., Milwaukee.
Guidelines for Neo-Natal Intensive Care Units.
13p May 71 Available NTIS HRP-0003952

Optimum criteria for establishment of neonatal intensive care units in southeastern Wisconsin are presented. The following factors are considered: staffing (registered and licensed practical nurses and physicians); physical facility requirements; minimum desirable case load; relationship of

the neonatal intensive care unit to other hospital programs and to other hospitals; physician and allied health personnel training; and patient follow-up. An outline for use in identifying high-risk pregnancies is included. The ideal minimum case load for a hospital operating a neonatal intensive care unit is set at 200 or 300 patients. The importance of patient follow-up in the effective operation of the unit is emphasized. It is noted that the neonatal intensive care unit at Milwaukee County General Hospital, which serves the seven-county southeastern Wisconsin area, can accommodate only about 20 percent of the infants in the area who require the care available in such facilities.

Comprehensive Health Planning Association of Western Pennsylvania, Inc., Pittsburgh. Regional Plan Development Committee.
Guidelines for the Planning and Development of Burn Care in Western Pennsylvania.
19p Dec 74 Available NTIS HRP-0003803

Qualitative and quantitative guidelines for planning and developing a community-oriented system of burn care are presented. A burn care center is defined, and criteria for patients to be transferred to such a center are set forth. Staffing of a burn center team consists of the following: chief of burn center (surgeon), one or more resident physicians, nursing supervisor and staff, clerical personnel, exclusive housekeeping staff, consultants from appropriate specialty services, occupational and physical therapists, psychiatrist or psychologist, nutritionist, and photographer. Facilities and equipment are described. Similar considerations are discussed for general hospitals providing specific burn care to patients not requiring treatment at a burn care center. Economic considerations are outlined. It is noted that establishment and operation of a burn center is extremely costly, both financially and in manpower hours required per patient. Establishment of a community education program to decrease occurrence of burn injuries is encouraged; a format for such a program is outlined. A formula for forecasting burn center bed needs by service area is given. A flowchart of the comprehensive health planning process and a bibliography are included.

Corn Florence, Hahn Margot, Lepper Kathleen
Bronx Municipal Hospital Center, N.Y.
Salvaging Primary Nursing.
Pub. in Supervisor Nurse v8 n5 p19-21,24,25 May 77.

A primary nursing care program was in effect for only 2 months at Bronx Municipal Hospital Center in New York City when the city's fiscal crisis terminated the project. By

that time, however, the nurses in the demonstration project, a 37-bed general surgical unit, felt that primary nursing care is the professional nurse role of the future. In May 1975, there were 15 staff nurses, 2 practical nurses, and 11 nurse aides assigned to the unit, and almost all completed the prejob satisfaction questionnaire. However, only one-half completed the poststudy Staff Satisfaction Questionnaire. The nurse aides at the end of the study period were 100 percent negative, feeling that the workload was too great. Actually, 62 percent of the registered nurses complained about this also. However, the professional nursing staff desired to expand the program as finances and staffing improve. A table shows the opinions of the registered nurses as to quality of care at the end of the study period. As many thought the quality was excellent or good as there were those who thought it fair or poor. An appendix is included, listing the duties of the head nurse, the primary nurse practitioner, the associate nursing practitioner, and nurse aide. The instruments used in the study, such as the Patient Care Audit which already had been in use in the Quality Assurance Program, were not included in the report.

Costello Raymond M, Giffen Martin B, Schneider Sandra L, Edgington Philip W, Manders Kenneth R
Texas Univ. Health Science Center, San Antonio.
Comprehensive Alcohol Treatment Planning, Implementation, and Evaluation.
Pub. in the International Jnl. of the Addictions v11 n4 p553-570 1976.

The first 8 months of a program funded by the National Institute on Alcohol Abuse and Alcoholism are described. Relationships among treatment concepts, staffing patterns, and clinical services are addressed. Service components that were operational in this program are evaluated. Staffing patterns and administrative decisions regarding case findings influenced the design of clinical services more than theory or applied science literature. They also influenced the outcome of evaluative efforts. Outpatient services were indistinguishable from alcohol abuse activities. A total caseload evaluative review (tables are included) showed that 21.4 percent of the closed cases and 25.7 percent of the open cases were successful. Intermediate care services represented an attempt to put treatment concepts into operation independent of an alcohol abuse model. A therapeutic milieu was developed that emphasized group therapy, structured work projects, physical reconditioning, vocational counseling, and various elective, adjunctive modalities. Significant issues associated with this and other alcohol program evaluations are raised. The effect of staffing practices and client recruitment on the

implementation of treatment components is explored.

Coulton Mary R
Ralph K. Davies Medical Center - Franklin Hospital, San Francisco, Calif.
Labor Disputes: A Challenge to Nurse Staffing.
6p 1976 Available from Jnl. of Nursing Administration v4 n4 p15-20 May 76.

A nursing director's response to an overstaffing problem resultant from a physician boycott is described. In May 1975, anesthesiologists and other physicians sympathetic to their cause withdrew their services from a hospital in San Francisco, Calif. Elective surgery was curtailed, hospital admissions were decreased, and the patient census was reduced to 61 percent. The director of nursing took a step-by-step approach to solving the overstaffing situation in the nursing department. The steps were: defining overall needs, purposes, and goals; defining the problem; specifying the approach to the problem; stating behavioral objectives and performance criteria; listing alternative solutions; analyzing the alternatives; applying decision rules; controlling and implementing the decision; and evaluating the effectiveness of the solution. The solution chosen was to accept requests from nursing department employees for vacations, holidays, and absent days; to grant these requests on a daily basis, depending on patient census and nursing illness; and to retain centralized control. The contingency staffing plan proved successful in implementation, meeting requirements for adequate staffing and needs of employees. Details of the step-by-step problem solving approach are provided.

Dahl G. L, Eidson Ron
Association of South Central Oklahoma Governments, Duncan.
EMS System Plan.
89p Jan 75 Available NTIS HRP-0004013

An Emergency Medical Service (EMS) system plan for an eight-county, primarily rural district of south central Oklahoma is presented. Demographic and area characteristics of the district are described. The existing EMS resources such as: manpower (physicians, nurses, and emergency medical technicians); training; communications; transportation; and facilities are reviewed. Problems are identified with regard to these four areas and to critical care units, public safety agencies, consumer participation, accessibility of care, transfer of patients, standard medical record keeping, consumer information and education, systems evaluation, disaster planning, and mutual aid agreements. Needs are assessed in each of these areas, and objectives are stated.

Methods of program implementation and project evaluation are set forth. For the existing 46 emergency medical vehicles in the area, an estimated 224 more emergency medical technicians are needed than are presently available. More physicians and nurses are needed in the district. Only three of the 12 hospitals in the area are radio-equipped. Few of the emergency medical vehicles in use comply with U.S. Department of Transportation standards. Only two of the 12 hospitals have basic 24-hour emergency services; no comprehensive emergency services are available in the area. Several hospitals in the area do not admit emergency room patients without cash in hand. Due to existing legislation, emergency patients are taken to the closest facility regardless of whether that facility can provide adequate treatment. No standard form for record keeping and no evaluation system exists. Program implementation methods for alleviating these problems include specific schedules of action in each area. Supporting data are presented in over 20 tables. Portions of this document are not fully legible.

Duffus A. J, Smith N
Temporary Staffing Service: An Answer to Fluctuating Needs in Hospital Staffing.
Pub. in Hospital Topics v54 n8 p43-48 Nov-Dec 76.

Elpern Ellen Heid
Rush Presbyterian - St. Luke's Medical Center, Chicago, Ill.
Structural and Organizational Supports for Primary Nursing.
Pub. in Nursing Clinics of North America v12 n2 p205-219 Jun 77.

The introduction of primary nursing into a health care facility involves not only a philosophical change from a more traditional nursing approach, but also changes in nursing roles and unit organization. Role changes required for the institution of primary nursing necessitate provision of a sufficient number of professional personnel to meet patient care needs; development of professional interdependence, both within nursing and between nurses and other health workers; institution of professional autonomy for nurses; and development of a unit structure in which the primary nurse is most responsible to the patient. One approach to providing a unit structure conducive to primary nursing is the introduction of modular nursing, in which nurses are permanently assigned to a relatively small geographic grouping of patients, although they may rotate shifts. This organization provides an opportunity for nursing personnel to develop working relationships and skills in communication and nursing care management. Although modules must still function within the unit organization, the module structure facilitates the decentralization of responsibility for

patient care management more to the level of the individual nurse. Leadership changes to support this form of primary nursing include the development of the positions of a unit leader and a module leader, each having 24-hour responsibility and accountability for their organizations. Creation of the position of area director, responsible for the direct supervision of and responsibility for all nonmedical and non-nursing personnel while working on patient care units, enables the decentralization of responsibility, authority, and accountability for nonclinical services to the operational level.

Erwin W. Frank
Florida Univ., Gainesville. Health Systems Research Div.
The Utilization of Nursing Personnel in Florida Hospitals as a Function of Hospital Size and Inpatient Days,
52p 12 Jul 73 Available NTIS HRP-0000608/0

Data from the 1972 American Hospital Association survey of nursing personnel in short term general hospitals in Florida are presented and graphed. The data were totaled for each of the categories of nurses developed, and grouped, in addition, by hospital bed size. The data on staffing levels for the personnel categories considered were plotted as a function of hospital bed size and inpatient days to suggest the functional form of the relationship between these variables. Because the relationship between hospital bed size and inpatient days was highly linear, linear regression equations were determined using the personnel categories as dependent variables and the hospital bed size or the number of inpatient days as the independent variable. Portions of this document are not fully legible. (NTIS)

Finlayson Hal
Kingston General Hospital (Ontario).
NUMBRS Approach to Nursing Management.
Pub. in Dimensions in Health Service v53 n5 p39-44 May 76.

An innovative management and reporting system for nurses at the Kingston General Hospital in Ontario, Canada, is detailed. Major components of the system include scheduling, patient classification (workload determination and variable staffing), quality assurance, and budgeting for nursing service. The computerized system, implemented in August 1974, is designed to be more flexible and offer more features than manual systems. Ten aspects of flexibility are built into the system: (1) the hospital can specify 4 to 6 weeks of scheduling; (2) the system can generate cyclical or flexible schedules simultaneously for different units; (3) fixed patterns and nurses on permanent shifts can be integrated with flexible schedules; (4) nurses can specify

days off, including weekends; (5) nurses can specify shift preferences; (6) nurses can specify tradeoff or work stretch versus split days; (7) the system software can schedule part-time staff; (8) the hospital can specify variable coverage by shift and day of the week; (9) the hospital can specify variable weekend off ratios; and (10) the hospital can specify, on a gross basis, the weighting on nursing coverage relative to individual patterns. The system is based on the Medicus approach to patient classification and workload determination, as developed by the Medicus Corporation in Chicago, Ill. It incorporates a patient classification sheet, a patient care index, patient care monitoring, personnel budgeting, and management reporting.

Georgette Janet Kinney
Hollywood Presbyterian Hospital, Los Angeles, Calif.
Staffing By Patient Classification.
Pub. in Nursing Clinics of North America v5 n2 p329-339 Jun 70.

Development of patient-oriented approach to staffing is described which is based on a system of patient classification according to care requirements. As part of an overall study to determine standard nursing hour requirements for Hollywood Presbyterian Hospital, a team consisting of a systems analyst, nursing administrator, head nurses of the medical surgical units, and a representative of inservice education department developed a system for classifying patients according to the level of nursing care they require. The four patient categories progress from self sufficiency (Category I) to intensive care (Category IV). Based on this classification, total nursing care hours required per patient day are determined and prorated by shift and category. A schedule is then prepared for each shift showing required hours for each category of patient. Once the system for determining total number of hours for a shift was established, an approach was developed for determining how many of these hours should be professional and how many could be nonprofessional in orientation. The overall procedure provides a total staffing picture for each patient care unit, and promotes the effectiveness of the team nursing approach. Supporting data and forms, plus a summary of guidelines used to classify patients according to nursing care requirements, are included.

Giovannetti Phyllis, McKague Laverne
Saskatchewan Univ., Saskatoon. Hospital Systems Study Group.
Patient Classification System and Staffing By Workload Index: A Working Manual.
32p Apr 73 Available from Hospital Systems Study Group, 3337 8th Street East at Acadia Drive, Saskatoon, Saskatchewan, Canada 57H4K1.

The concepts of patient classification and staffing by workload index are described and steps in implementing these concepts are outlined in a manual developed during a 5-year nursing research project directed toward problems in the delivery of nursing care. The patient classification system entails the categorization of patients according to four levels of nursing care requirements ranging from minimal to intensive. The levels center on the patient and are not limited to the technical aspects of care. The concept is based on the isolation of several critical indicators or components of physical and psychosocial needs which, when identified, permit assignment of the patient to an appropriate category of care. The workload index relates to the quantification of the levels of care, measuring the direct nursing care component of each of the four categories of care. Staffing by workload index incorporates the direct care index associated with each category along with the nursing staff time available to provide direct care. A simple trial and error method is included for determining the workload index for any hospital without resorting to activity studies. Full documentation of both concepts and their implementation is provided, as are related forms.

Hambleton B
Staffing Inflation.
Pub. in Nursing Mirror and Midwives Jnl. v144 n18 p68-70 5 May 77.

Hanson Robert L
Virginia Mason Hospital, Seattle, Wash.
Predicting Nurse Staffing Needs to Meet Patient Needs.
Pub. in Washington State Jnl. of Nursing v48 p7-11 Summmer/Fall 1976.

A patient classification system was developed at Virginia Mason Hospital in Seattle, Washington, in order to provide a quantitative means of measuring and reporting nurse staffing needs. An initial nursing activity study identified 12 direct care activities, out of a possible 72, that had high correlations with the total nursing direct care time when patients were divided into four groups. The results of this study were then used to develop a Patient Classification and Nursing Utilization system, which was implemented on all

medical-surgical nursing units at the hospital. After two years of practical experience with the system, the tool was retested at Virginia Mason Hospital and tested in two additional institutions. Data collection for each patient in the study included demographic data, classification level according to the tool, and the number of minutes of direct nursing care per shift, documented for 24-hours on each patient. In all cases and in all three institutions, the differences between mean direct nursing care times for adjacent classification levels were found to be significant. In addition, the similarity between institutions in the mean direct care times by classification level was striking. The Virginia Mason Hospital patient classification tool was found to be valid on the basis of its ability to provide predictive discrimination between groups of patients in terms of the amount of direct nursing care they receive. The tool is useful in making daily staffing decisions, justifying staffing and budget proposals, adjusting staffing rotations, evaluating supervisors, and providing partial justification of the hospital budget to overseeing organizations.

Hinshaw Ada Sue, Verran Joyce, Chance Helen
Arizona Univ., Tucson. Health Sciences Center.
Description of Nursing Care Requirements in Six Hospitals.
Pub. in Communicating Nursing Research v9 p261-283 1977.

A cross-sectional design was used to produce data on the estimated nursing care requirements of patients in six hospitals representing five major types of organizations: one county hospital, two private community hospitals with religious affiliations, one general hospital in a retirement community, one community medical center, and one university hospital. In most hospitals, the following major clinical services were surveyed: medicine, surgery, pediatrics, obstetrics, and critical care units. The nursing care requirements in each of the hospitals on all clinical services were measured with a patient classification scale using 14 factors. The first six factors require only a positive or negative response, while the last eight require the selection of one of several responses describing the nurse's perception of the patient's need for care. These eight factors include activity, hygiene, feeding, medications, vital signs, treatment and medical orders, physical or mental impairments, and emotional components. Data comparing the nursing care requirements of the university hospital with those of the other hospitals indicated that clients served in the university hospital had greater nursing care requirements in categories that are more likely to require direct implementation by professional staff, while they showed fewer nursing care needs in the more standardized care areas for which the direct implementation can be more safely delegated to nonprofessional staff,

supporting the basic assumption that university hospitals require a higher professional-to-nonprofessional ratio of nursing staff than other hospitals. Nursing care data across hospitals can be used in community planning for both nursing service and nursing education.

Horoshak I
'Mobility' Is This Hospital's Byword.
Pub. in RN v29 n9 p65-67 Sep 76.

Hutchins C, Cleveland R
For Staff Nurses and Patients-- 7-70 Plan.
Pub. in American Jnl. of Nursing v78 n2 p230-233 Feb 78.

Hymovich Debra P, McCabe Susan, Stokes Nancy Doyle, Patterson Margaret B
Texas Univ. Health Science Center at San Antonio. Clinical Nursing School.
Faculty, Nursing Staff Form Planning Team.
Pub. in Hospitals, Jnl. of the American Hospital Association v45 p59-61 1 Jul 71.

A planning team composed of faculty and nursing personnel in the pediatric nursing section of Shands Teaching Hospital at the University of Florida is described. Members of the team are a senior and a junior nursing faculty member and a nursing service team leader. The team's purpose is to strengthen communication between nursing service personnel and faculty, to facilitate student learning experiences in the clinical area, and to improve nursing care. The senior faculty member is responsible for coordinating and planning meetings, research, consulting with other team members, and planning for continuing education of team members. Initial team planning began with the development of common goals; once these were determined, discussions centered on methods of improving the learning environment for students and improving patient care. The team approach has helped faculty members to focus on the realities of nursing service, and nursing staff members have developed a greater respect for faculty knowledge. The planning team has contributed to improved communication between nursing service personnel and nursing educators.

Indiana State Dept. of Mental Health, Indianapolis.
SPAN. Staffing for Patient's Actual Needs.
90p 1970 Available NTIS HRP-0001570

The SPAN (Staffing for Patient's Actual Needs) system of evaluating staffing requirements for hospitals is discussed. This computerized system applies methods used in industrial engineering to determine the number of staff required to meet needs of patients. The system is used in State psychiatric facilities in Indiana. The initial phases of the project determined the needs for nursing personnel. In the future the system will be used to analyze other areas of patient need, including recreation, activity therapy, and social service. The system provides management with necessary data for personnel management and for patient population analysis. It also identifies trends important in budgeting for cost analysis. A semi-annual inventory is made of all patients, with classification according to characteristics which determine the care they require. This profile, along with a manpower inventory, is fed into a computer which analyzes the number of minutes of care required to meet each patient's need and provides summaries of total staffing needs. The report presents results of the study of nursing staff patterns and requirements for 1970, 1971, and 1972 at 12 State psychiatric hospitals. An analysis of the progressive SPAN surveys yields a picture of staffing patterns in the various hospitals in the State. Results are presented in tabular form without specific conclusions. Portions of this document are not fully legible.

Indra R, Ferrara A
Stochastic Response Poisson Distribution of Emergency Urban Infant Transport Calls Affecting Staffing Patterns.
Pub. in Pediatric Research v10 n4 p347 1976.

Inland Counties Health Systems Agency, Colton, Calif.
Renal Dialysis Units Guidelines.
7p 1975 Available NTIS HRP-0018245

California's classification of hemodialysis facilities is outlined, and guidelines are presented for the Inland Counties Health Systems Agency, Colton, Calif., when considering proposals for new hemodialysis facilities. The classes of facilities are the renal dialysis center, a hospital-based unit providing comprehensive services to renal disease patients; and the community hemodialysis unit, which provides dialysis in the unit and supervision of patients undergoing dialysis at home. The four major points to be considered in evaluating proposals for community units are the convenience of the proposed facility for potential users; the mix of extended care, home-training, and hospital-based

beds; emphasis on home dialysis; and the need for expansion of dialysis facilities in a given area. Other considerations relate to the proposed facility's design and equipment, integration with existing dialysis programs and with related services, the range of services to be offered, staffing needs, home-training capabilities, quality assurance mechanisms, projected expenses and charges, and other aspects. Each major guideline is followed by statements and questions which can help a planner make decisions on the need for and type of dialysis units.

Iowa Regional Medical Program, Oakdale.
Study of Potential Satellite Clinic Sites in the Maquoketa Area.
44p 1 Mar 75 Available NTIS HRP-0018173

A study was undertaken in the rural Maquoketa area of Iowa to determine the best sites for satellite clinics for a six-man group practice. Seven communities in the Maquoketa area were evaluated as potential sites, recommendations were drawn, and possible operational arrangements were considered. Each site was evaluated on the basis of availability of medical resources, estimated patient volume, potential financial success, and community acceptance of a satellite arrangement. The sites were also considered in terms of their distance from and social and economic alliance to the central community in which the group practice is located and to other communities. Communities which already had active practicing physicians or which showed strong orientation to community or area health centers other than Maquoketa were eliminated from consideration, and the remaining five communities were ranked according to their scores on factors of proximity to physician services, township population, 1960-1970 population change, population age composition, family income distribution, and projected utilization. Guidelines for operating the satellites touch on facility requirements, staffing, operating hours, and services. Use of physician extenders is recommended. Supporting data are included.

Jenkins A. L
American Coll. of Emergency Physicians, East Lansing, Mich.
Emergency Department Organization and Management.
257p 1975 Available from C.V. Mosby Co., 11830 Westline Industrial Dr., St. Louis, MO 63141.

This guidebook, designed to improve emergency medical services, contains an overview of the field of emergency medicine. Criteria for the establishment of an emergency department are noted. Emergency medicine is viewed as a specialty field in terms of meeting and improving the needs of patients. The major role of an emergency department is

identified as the provision of efficient care. Emergency department design and staffing requirements are addressed, and the role of emergency department nurses in the provision of care is discussed. Consideration is given to the medical education and training of emergency department staff, departmental policies and procedures, and records and forms. The relationship between an emergency department and other hospital departments is examined. The effectiveness of community resources and involvement in the delivery of emergency care is explored. Disaster planning and transportation and communication aspects of an emergency department are described. Discussions on efficiency, legal, and financial parameters to consider in the field of emergency medicine are presented. Appendixes to the guidebook concern contracts, bylaws, and rules and regulations for emergency departments; standards for emergency departments; and emergency physician credentialing.

Jensen M. R, Harris R. E
Quantitative Description of the Patient Population in a Labor and Delivery Unit. Toward Determination of Real Nurse Staffing Needs.
Pub. in Jnl. of Obstetric, Gynecologic and Neonatal Nursing v6 n5 p9-12 Sep-Oct 77.

Johnson Jo, Ganti Annajee R, Nagy Emil J
Creighton Memorial Saint Joseph Hospital, Omaha, Nebr.
Objective Patient Classification System in Psychiatric Nursing.
Pub. in Canada's Mental Health v24 n2 p23-26 Jun 76.

A system for classifying patients in the psychiatric division of a hospital is described. The purpose of the classification is to serve as an aid in determining nurse staffing needs and improving scheduling practices. The system also is intended to help nurses in developing comprehensive patient care plans, to be used for review purposes by supervisors, and to serve as a basis for considering the feasibility of developing a revised patient charge system. The adaptation of the system from one developed by Community Management Services, Inc. (CMS), and implemented in Canadian and American hospitals is described. The CMS classification forms for community therapy, acute intensive care, adolescent service, and children service were revised to meet the needs of the psychiatric unit. Using the appropriate form, nurses follow written guidelines in classifying patients according to their physical needs, safety and precautions, tests and treatments, behavior, and family interactions. Numerical scores for indicators in each of these areas are converted to letter categories, which indicate the level of care required by the patient.

Difficulties in implementing the patient classification system are noted, and the benefits and limitations of the system are discussed. A table showing the numbers of patients (by service) classified at each level of care during 1973 and 1974 is included, as is an illustration of one of the classification forms.

Johnson William Clint
Texas Tech Univ., Lubbock. Dept. of Economics.
A Review and Analysis of Changed Work Schedules in Hospitals.
914p May 75 Available NTIS PB-246 234/9

New work scheduling configurations have been shown to have potential for substantial labor savings in hospital operation. The present economic environment is one in which increasing real expenditure on hospital care is placing burdens on society's resources. The study provides a data base for analysis of changed work schedules in hospitals in terms of efficient utilization of the labor factor. The data were obtained by survey of administrators and employees in U.S. hospitals reporting experience with work schedules altered from the traditional eight-hour pattern. The analysis, utilizing appropriate statistical tests, shows that economy in the use of resources does not occur among primary objectives or principal outcomes of the schedules. Administrators have relied on traditional objectives of improvement of service. Programmed increases in man-hour input appear more frequently than do programmed decreases. The nursing divisions in particular are characterized by increases in labor input. The twelve-hour schedule fits the economizing hypothesis more closely than does the ten-hour schedule. (NTIS)

Lee J. M
Nurse Bank Scheme.
Pub. in Nursing Times v73 n49 p1926-1927 8 Dec 77.

Levine Eugene
Public Health Service, Bethesda, Md. Div. of Nursing.
Research on Nurse Staffing in Hospitals. Report of the Conference.
198p May 72 Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, $2.35.

Proceedings of the Conference on Research on Nurse Staffing in Hospitals, sponsored by the Division of Nursing, Public Health Service, DHEW, and held in Fredericksburg, Virginia, May 23 through 25, 1972, are reported in a companion volume to a comprehensive critique of nurse staffing methodology

published by the Division in January 1973. The conference brought together 45 persons from a variety of disciplines, all with experience in nurse staffing research. An opening presentation provides an overview of nurse staffing research, and ten papers discuss variables considered significant in influencing the quantitative and qualitative demand for nurse staffing. These variables include: patients' requirements for nursing services; architectural design of the hospital; administrative and cost factors; and social - psychological factors. In addition, papers are presented on evaluation of the quality of nursing care and on the impact of computerized information systems on staffing. Transcriptions of discussions following each presentation are provided. The report closes with a summary and synthesis of the conference proceedings, and comments on future direction for nurse staffing studies. Summaries of conference task force recommendations concerning future directions for research on nurse staffing in hospitals are appended.

Levine Eugene
Public Health Service, Washington, D.C. Div. of Nursing.
Nurse Staffing in Hospitals.
Pub. in American Jnl. of Nursing v61 n9 Sep 61.

Three hospitals were studied to determine (1) what factors enable Federal hospitals to operate with half as many nursing personnel per patient as nonfederal hospitals, (2) whether Federal hospitals provide less adequate services than nonfederal hospitals because of lower staffing, and (3) whether the lower nurse staffing in Federal hospitals indicates greater administrative efficiency. Two nonfederal voluntary community hospitals were compared with the U.S. Public Health Service Hospital in Boston, Mass.; all hospitals were 210-250 bed short-term general hospitals without schools of professional nursing. Five broad factors were considered: patients receiving services, personnel providing services, adequacy of services being provided, organizations in which services are provided, and efficiency of the organizations. By using a classification schedule it was determined that about 20 percent of the difference in staffing was explained by the fact that patients in the Federal hospitals were less acutely ill than patients in nonfederal hospitals. Adequacy of nursing services was assessed, and the data suggest that another 20 percent of the difference in staffing was attributable to a greater number of nursing service omissions in the Federal hospital. An estimated 22 percent of the staffing difference seemed due to certain organizational characteristics of the Federal hospital that could not readily be adopted by the nonfederal hospitals (e.g., use of large wards and a central dining room). Approximately 30 percent of the difference may indicate greater administrative efficiency. The

methodologies are described, and implications are suggested.

Levine Eugene, Siegel Stanley, Puente Joseph Dela
Public Health Service, Bethesda, Md. Div. of Nursing.
Diversity of Nurse Staffing Among General Hospitals.
Pub. in Hospitals, Jnl. of the American Hospital Association
v35 p42-48 1 May 61.

Data on the actual ratios of bedside nurses to patients in short-term general and allied special hospitals in the United States are presented and analyzed. The data, obtained from the twelfth annual hospital survey conducted by the American Hospital Association, indicate that great diversity exists in nursing staff ratios among these hospitals. While nurse staffing requirements traditionally are based on patient census, the data demonstrate that other factors could be influential. When hospitals are grouped according to such characteristics as size and geographic location, differences in staffing ratios are found among hospitals in the same group, and diversity exists between the average ratio of a group and an individual member. The data suggest that diversities exist largely because: (1) nurses aides and orderlies comprise almost one-half of the total bedside nursing personnel in hospitals while professional staff nurses account for less than 30 percent; (2) the ratio of total bedside nursing personnel to patients shows less diversity than the ratio for specific personnel categories, suggesting that there is more uniformity as to size of total nursing staff but less uniformity as to its composition; (3) staff ratios decrease as hospital size increases; (4) as the percentage of professional bedside nurses increases, the ratio of administrators decreases; (5) the highest ratio of total bedside nursing personnel is in proprietary hospitals and the lowest in Federal hospitals; (6) as hospital locale population increases the ratio of bedside nursing personnel decreases; (7) the highest bedside nursing ratio is in the West; the lowest in the Northeast, which has the highest professional staff nurse ratio; (8) nurse patient ratios vary greatly from State to State. Utah has the highest ratio and Pennsylvania the lowest. Ratio tables appear throughout and a reference list is given.

Levine Eugene
American Univ., Washington, D.C.
Comparative Analysis of the Administration of Nursing Services in a Federal and Non-Federal General Hospital.
354p 1960 Available from University Microfilms International, 300 N. Zeeb Road, Ann Arbor, Michigan 48106.

Factors contributing to the difference in nurse - patient ratios in Federal and nonfederal hospitals are examined in a

comparative analysis of the nursing services in three general hospitals, one under the control of the U.S. Public Health Service (PHS) and two privately controlled. The PHS-controlled hospital maintained about half as many nursing personnel for its patients as did the nonfederal hospitals. It was hypothesized that the ratio of nursing personnel to patients in a general hospital is related to the patients' requirements for nursing services, the level of adequacy of nursing services, and the organizational characteristics of the hospital. Patients' requirements for nursing services were rated in all three hospitals; the adequacy of services was evaluated by patients and personnel; and analyses were performed of physical and organizational structure, administrative techniques and processes, and personnel characteristics that might account for the difference in nurse - patient ratios. The findings indicate that about 20 percent of the total difference in staffing could be attributed to a lighter workload in the Federal hospital; 20 percent to the fact that the Federal hospital was understaffed; and 60 percent to differences in organizational characteristics of the two types of hospitals. Among the characteristics of the Federal hospital that contributed to lower staffing were: the use of open wards; a simplified, flexible organizational structure; lower turnover among personnel; use of a central dining room for patients; and greater attention to administrative techniques and processes that promote economy and efficiency. It is concluded that administrative efficiency can contribute to a reduction of nursing shortages through a more productive use of nursing skills. Details of study methodology, supporting data, a 22-page bibliography, a glossary, and copies of study instruments are included.

Levine Harry D, Phillip P. Joseph
American Hospital Association, Chicago, Ill. Bureau of Research Services.
Factors Affecting Staffing Levels and Patterns of Nursing Personnel
158p Aug 73 Available NTIS PB-239 207/4

Concern for the quality and the increasingly high cost of hospital care has emphasized the need for a detailed analysis of existing data about and related to nurse staffing, and for development of models which could assist administrators concerned with nurse staffing to address these concerns. The data came from four sources: the 1970 American Hospital Association-Division of Nursing joint survey of nursing personnel employed in hospitals; the Association's 1970 annual survey of hospitals; Health Resources Statistics, 1971; and Census of Population: 1970. Employment of nursing personnel in community hospitals was analyzed from the perspective of demand, need, and potential of hospital care

for the community. These analyses provide new perspectives for looking at the maldistribution of nursing personnel and new understanding of the factors affecting the level and patterns of nurse staffing. Regression models were developed for each of six personnel categories based on the consideration of 21 independent variables. (NTIS)

Lewis Amber T
University Hospital, San Diego, Calif.
Nursing Aspects and Organization for Perinatal Care: The Newborn Intensive Care Unit.
Pub. in Clinics in Perinatology v3 n2 p497-502 Sep 76.

The roles of nursing personnel in neonatal intensive care units are outlined in the areas of administration, education, direct and indirect patient care, and family involvement. The major responsibility of the nurse in the newborn intensive care unit is the preparation of the infant for discharge to a home that is prepared for the child's arrival. The medical and nursing team work together toward the goal of survival and toward the earliest possible discharge of the infant in the best possible condition. The members of the nursing administrative staff on the neonatal intensive care unit include the supervisor, head nurses, and unit manager. The duties of each are summarized. The responsibilities of the educational coordinator generally involve ongoing education, orientation of new personnel, nursing research projects, teaching in outlying facilities, conducting community seminars, and establishing standards of care. The opportunities for professional growth available to the staff nurse in the neonatal intensive care unit are pointed out, and staffing patterns in the unit are discussed. The duties of clerical personnel and aides in the unit are noted briefly. The importance of the involvement of families in the newborn intensive care unit is stressed. The responsibilities of the primary nurse, i.e., the nurse who coordinates the infant's care and the family's involvement throughout the child's illness and prepares the infant and family for discharge, are outlined.

Liebman Judith S, Young John P, Bellmore Mandell
Illinois Univ., Urbana. Dept. of Civil Engineering.
Allocation of Nursing Personnel in an Extended Care Facility.
Pub. in Health Services Research v7 n3 p209-220 Fall 72.

A model for the assignment of direct care tasks to bedside nursing personnel is described. Using an ordinal scale of perceived effectiveness, the model generates daily task assignments indistinguishable from or superior to those used by nursing team leaders. A modification of the model has potential use in long-range planning of personnel needs,

allowing comparison of alternative staffing patterns by their relative effectiveness profiles and facilitating cost / effectiveness comparisons. Twenty registered nurses, licensed practical nurses, and nursing aids in an extended care unit of a Baltimore rehabilitation facility provided the basis for the allocation model through a Q - sort procedure designed to measure these nurses' concept of effective personnel utilization. Computer-generated task assignments, based on these concepts, were validated for acceptability in a test in which the nurses compared 18 pairs of alternative personnel assignments, some generated by the computer, and others by the nursing team leader. In six comparisons, the nurses showed no significant preference between the computer plan and the team leader's plan; among ten pairs in which a preference was established, the nurses preferred the computer-generated plan to the team leader's plan nine times. Modification of the model for evaluating alternative staffing configurations is demonstrated, showing the model's ability to generate 'team effectiveness' profiles which allow comparison of the dollar cost and perceived personnel effectiveness of alternative staff configurations when frequencies of direct-care procedures on the unit are known. A bibliography is included.

Long A, Pushkin J, Rudlin M
Staffing Intensive Therapy Units.
Pub. in Nursing Times v73 n47 p1836-1839 24 Nov 77.

Magenis James E, Sullivan Donald J
Hospital Association of New York State, Inc., Albany.
Evaluation of Costs and Facilities for Renal Dialysis.
41p Dec 71 Available NTIS HRP-0011571

The costs of incenter renal dialysis in four hospitals in the Genesee Region of New York are compared with the costs of home-based dialysis in light of a fifth hospital's proposal to add a new incenter renal dialysis facility. The study found home dialysis costs, including incenter training, home installation, and individual treatment costs, to be significantly lower than costs in all incenter facilities. The required number of nurse and technician hours for incenter dialysis was determined to be 4.63 hours per dialysis, which is significantly lower than the existing staffing patterns in the hospitals studied. A staffing schedule for minimizing nurse and technician costs for incenter dialysis is recommended that calls for a six-bed unit staffed by two nurses, two technicians, and one clerk. Other recommendations for reducing incenter dialysis costs include the shifting of certain nursing functions to technicians, the use of staggered arrival schedules for patients, the reuse of certain disposable items, and the

reduction of the amount of laboratory testing done. It is recommended that the proposed incenter facility be approved, considering its relatively low costs in comparison to other area facilities. The expansion of home dialysis is also recommended. It is estimated that a total of $78,000 in personnel savings and $39,000 in laboratory charge savings is possible for the kidney dialysis programs in the hospitals studied. Supporting data are included.

Mason Elizabeth S
North Carolina Dept. of Human Resources, Raleigh. Div. of Facility Services.
Outpatient Surgical Facilities. A Suggested Planning Guide.
33p 30 May 75 Available NTIS HRP-0003867

A planning guide for outpatient surgery facilities is presented by the Division of Facility Services of the North Carolina Department of Human Resources. Examples of surgical procedures which could be performed on an outpatient basis are listed. Steps to be taken in determining the feasibility of an outpatient surgical program are described, including: literature review; determination of current activities in other communities; determination of community needs; and estimation of costs. Operational program development is discussed. General elements of operation to consider in planning are defined as follows: selection of patients; diagnostic and evaluation procedures; patient admissions, surgical preparation, recovery, and discharge; staffing of medical and nursing personnel; and administrative functions. A schematic illustration depicts the functional elements of the outpatient surgery process for cases utilizing general anesthesia or local anesthesia with sedation. General elements of design and equipment for outpatient surgical facilities are outlined. A six-page bibliography and a list of organizations which can assist in planning outpatient surgical facilities are included.

McCartney Richard A, McKee Barbara, Cady Lee D
Hollywood Presbyterian Hospital, Los Angeles, Calif.
Nurse Staffing Systems.
Pub. in Hospitals, Jnl. of the American Hospital Association v44 p102-105 16 Nov 70.

The development of systems by hospitals to project nursing manpower needs for patients with varying degrees of illness is examined. It is pointed out that nurse staffing systems should incorporate management controls in addition to considering the number and kinds of patients in a hospital. The staffing system developed at the Hollywood Presbyterian Hospital in Los Angeles, Calif., is described. The objective of the system was to improve the cost-effectiveness of

hospital services through performance standards and staffing improvements. Two concepts were essential in the design of the system: (1) the total amount of nursing care required over a specified period, according to the hospital's average patient load, can be determined adequately by industrial engineering methods; and (2) required nursing care standards can be used on a daily basis for the allocation of staff hours, allowing for any needed variations in patient care time. The role of the head nurse in the hospital's staffing system is explored. Four patient care categories are identified: patient requiring minimal nursing care, patient requiring a moderate amount of nursing care, patient requiring considerable direct care, and patient requiring intensive nursing care. The development of performance standards for the staffing system is reviewed. In the system, staffing formulas and tables are established in relation to total nursing time required per patient day (4.5 hours). This time is prorated by shift. The formula for determining the number of nursing staff hours required for each of the four patient categories is appended.

McConnel E, Wiley L
Staffing Should Be Spelled Staffing: Or How Many Staff Nurses Are Enough.
Pub. in Nursing (Horsham) v7 n11 p97-101 Nov 77.

McWhirt P. D
Staffing in a Psychiatric Unit.
Pub. in Supervisor Nurse v8 n12 p27-33 Dec 77.

Michigan Dept. of Public Health, Lansing. Bureau of Health Facilities.
Guidelines for Hospital Obstetrical Departments and Newborn Nurseries. Revised Edition.
14p 1968 Available NTIS HRP-0005776

Guidelines for hospital obstetrical departments and newborn nurseries are presented by the Michigan Department of Public Health in order to insure mothers and their infants a continuum of high quality services delivered in an acceptable, efficient, and economical manner. The location and accessibility of such services in a general hospital are outlined, with standards given for caseload and utilization. Provision of at least one room, an outside room with a window, should be made for the labor room or suite (depending on caseload). Standards for the delivery room if caseloads require more than one are given, and specifications are outlined for the postpartum suite. An obstetrical recovery room may be located adjacent to the delivery suite or in the postpartum suite. Specifications for newborn nurseries are

given and provision is made for the isolation of an infant and / or mother. Nursing staff requirements are provided. Standards are described for the physician staff, the anesthesia services, and for utilization of related services in the hospital. Inservice education and training for obstetrical nurses is stressed, and a table presents data on suggested facilities by annual caseload.

Michigan Dept. of Public Health, Lansing. Bureau of Health Facilities.
Intensive Care Units. Minimal Criteria and Guidelines. Revised.
33p Dec 72 Available NTIS HRP-0005768

Minimal criteria and guidelines for intensive care units are offered by the Michigan Department of Public Health to hospitals which are considering the development of such units. These criteria and guidelines are also designed to assist hospitals to evaluate existing units, particularly if there is a need for enlargement or new construction. Essential minimal requirements for acceptable programs are printed in boldface type. The definition and purpose of intensive care units is explained, and benefits, functional requirements, and administration are outlined. Both initial planning steps and detailed planning requirements are given. The physical design of the unit is detailed with specifications for location, size, space, physical design, and structural needs given. Specifications are given for equipment, including monitoring and resuscitative equipment and supportive equipment. Personnel requirements for medical director, medical staff responsibilities and relationships, and composition of nursing staff and support personnel are described. Other points of concern include: visiting, exclusion of private duty nurses, behavioral problems, communicable disease problems, prohibition of gifts to patients, maintenance of data log, and an educational program. The safe design of an intensive care unit is detailed, as are safety practices and a preventive maintenance program. Appendices present supplemental data.

Michigan Dept. of Public Health, Lansing. Bureau of Health Facilities.
Cardiac Care Units. Minimal Criteria and Guidelines. Revised.
31p Dec 72 Available NTIS HRP-0005751

Revised criteria and guidelines for cardiac care units in hospitals are presented by the Michigan Department of Public Health, with updating resulting from changes in concepts. Certain deletions were made, and items required as of December 1972 were adopted under the required legislative

procedures for incorporation into the State Administrative Code. The purpose and definition of a cardiac care unit are given, together with general considerations. Planning considerations include methods, administration of the unit, and admission criteria. The physical design of the unit is specified regarding location, size, space, physical design and structural needs. Essential equipment should include: monitoring equipment, resuscitative equipment, supportive equipment, and additional supportive equipment. Personnel requirements are stated for the director, staff physicians, the educational program for physicians, nursing staff, and other ancillary services such as dietitians, social workers and pharmacists. Other concerns are noted, including: visiting, behavioral problems, communicable diseases, gift-giving to patients, and information access and accumulation. Specifications also are given for safe designing of the cardiac care unit, safety practices therein, and a preventive maintenance program. Appendices present data on safety precautions and equipment testing; suggested cardiac care facilities in and by annual caseload; and optional community educational services. A reference list is provided.

National Center for Health Services Research, Rockville, Md.
Evaluation of a Medical Information System in a Community Hospital.
25p 1976 Available NTIS HRP-0013430

A study of the impact of a computerized medical information system on El Camino Hospital in Mountain View, California is summarized. The evaluation concerns the impact of the system on the organization and administration of health care delivery at the hospital. The Technicon system is a real time, computer-based system that interacts with nurses, physicians, other health care professionals, and hospital administrators in the delivery of care to patients. The system affects all facets of the hospital environment. The summary includes a brief background description of the hospital and of the Technicon system, plus the major findings, conclusions, and recommendations of the evaluation. Findings concern changes in staffing levels after introduction of the Technicon system, effects of the system on nursing activities, evaluation of the system by nursing and medical staff members, the physician's use of hospital services, comparative analysis of medical records for accuracy and completeness, impact of the system on hospital performance, and qualitative impact in ancillary and support areas. The system is shown to have had a favorable impact on the organization and administration of El Camino Hospital. It is anticipated that such systems will expand in scope and use in the future as significant aids to utilization review and patient care audit, in on-line intervention to prevent

diagnostic and treatment errors, and as information sources. Supporting data and a photograph of the 'Video-Matrix-Terminal' used in the system are included.

Nield Margaret
Veterans Administration Hospital, Hines, Ill.
Developing a Projected Nurse Staffing Program.
Pub. in Supervisor Nurse v6 n7 p17-18,20-24 Jul 75.

The factors to be considered in predicting staffing needs in a new facility are discussed, with specific examples from the Kino Community Hospital (KCH) in Tucson, Ariz. The objective of a nurse staffing program is to determine the number and kind of nursing personnel required to provide nursing care of a predetermined standard for a specific group of patients. The quality of care is based on the institution's statement of goals and objectives of the nursing service. At KCH the purpose of nursing service is to provide quality patient care by compassionate and knowledgeable nursing service members. Personnel predictions, another key factor in a staffing program, will depend on patient classifications, type of nursing, supportive services, and architecture. The unit at KCH has 135 medical - surgical beds, and an average census of 77 percent. The nursing workload is related to patient care requirements, measurable with a patient classification system. At KCH 47.3 percent of the admissions in 1970 were classified as 'emergency,' and 32.8 percent were classified as 'urgent.' The suggested method of nursing care delivery at KCH is primary nursing care provided to the patient by one nurse who plans the care with the patient. The supportive services and architecture of KCH are described. Staffing patterns for the units are developed from analysis of nursing care hours required per day per nursing unit. At KCH 5 nursing hours per patient per day; 77 percent occupancy rate; 3 shifts of 8 hours each, and the ratio of registered nurses, licensed practical nurses, and nursing assistants (60 percent, 20 percent, 20 percent) are used to calculate the need for 105.3 full-time equivalent nurses for the 135 beds. A sample schedule is included, and evaluation activities are discussed. References are provided.

North Carolina Medical Care Commission, Raleigh.
Coronary Care Units: A Suggested Planning Guide for North Carolina Hospitals. Revised.
46p Jan 70 Available NTIS HRP-0003966

A planning guide is presented for use by North Carolina Hospitals in developing coronary care units. The North Carolina Medical Care Commission brought together knowledgeable individuals from several organizations and professions for an investigation of the various aspects of

planning and operating coronary care units. Steps for setting up coronary care units are delineated; these include laying necessary groundwork, arranging for discussions among physicians and hospital staff, estimating the number of beds needed for the unit and determining the required changes in design and equipment, forming a coronary care planning committee, and estimating cost of operation and planning for adequate financing. General elements of operation, i.e., staffing and of design, are described. Patient electronic monitoring and the need for electrical safety, electrical circuits in patient areas, reduction of electrical faults to below critical levels, and electrical safety in special procedures areas are discussed. A diagram of the isolated electrical system is included. Nurse procedures to be followed upon fault detection alarm are reviewed. Submission of plans to the State Commission for review is discussed. A glossary and listing of organizations offering consultative services in the area of coronary care unit design and operation are included. Portions of this document are not fully legible.

O'Connor Thomas J, Efurd Nancy
Donald N. Sharp Memorial Community Hospital, San Diego, Calif.
System Predicts Patient Census, Forecasts Staffing Needs, Costs.
Pub. in Hospitals, Jnl. of the American Hospital Association v52 n6 p95-101 16 Mar 78.

A system that allows the Donald N. Sharp Memorial Community Hospital in San Diego, California, to respond with precision to changing patient workloads is reported. In recognition of economic factors and concerns, the hospital administration decided to establish a monitoring system to control expenditures. All departments began to formally report their daily personnel costs per unit of service. A forecast committee was established to predict, on a weekly basis, activities for the following week. The purpose of this committee was to be aware of trends and adjust staffing patterns and other operating expenditures to the anticipated patient load. Procedures followed by the committee in trend analysis and forecasting techniques are detailed. The application of the forecasting system devised by the committee is detailed, and supporting data are tabulated. It is concluded that the system is simple and effective in developing a pattern of relationships between past hospital reservations and actual admissions for use in predicting future activities.

Orange County Health Planning Council, Tustin, Calif.
Guidelines for Inpatient General Medical and Surgical Care.
23p 1973 Available NTIS HRP-0004377

Guidelines for use in planning and review of hospital medical and surgical services in Orange County, California, are presented by the Orange County Health Planning Council. Current data on medical / surgical services in the County are summarized, and trends affecting these services are discussed. Sources of national and State standards are mentioned, and requirements for grant, proposal, or program review are set forth. Criteria are outlined with regard to institutional planning and coordination, scope of services, records and reports, accessibility, acceptability, economic feasibility, professional standards and quality assurance, and staffing (physicians, nurses, and allied health personnel). Utilization criteria are presented, and a formula for determining need levels for general acute care beds is included. Population projections for Orange County are provided. Alternatives to be considered before development of expansion proposals for medical / surgical care units are described, and grounds for adjustment of the State Plan for Hospitals and Related Health Facilities based on the services needs of a particular area are outlined. A bibliography is included.

Paetznick Marguerite
Lutheran General Hospital, Park Ridge, Ill.
Guide for Staffing a Hospital Nursing Service.
93p 1966 Available from Columbia Univ. Press, International Documents Service, 2960 Broadway, New York, NY 10027.

Guidelines for meeting the staffing needs of a hospital nursing service are presented, based on information and opinions gathered from 112 nurses, physicians, and hospital administrators in various countries. The guide offers a method for realistically calculating the numbers and categories of personnel needed to staff a hospital nursing service, based on an analysis of the nursing work to be done in a hospital ward. These calculations may be projected to determine staffing needs for an annual budget. A general discussion of staff training is included, with particular attention to the effective utilization of personnel through a strong, well-planned supervisory program. The guide opens with an overview of hospital nursing in the hospital, followed by a general discussion of planning the improvement of nursing care through staffing. The discussion touches on consideration of existing ward staffing patterns, requirements of the patients, and construction of the staffing pattern. Factors relating to the nursing care of the hospital patient (personal care, services performed by other hospital departments, the physical environment of the

patient, ward management of nursing care) are considered, as are hospital administrative practices relating to nursing. Organizational charts for a hospital nursing service in a medium-sized and a small hospital, an organization chart for a hospital nursing unit, position descriptions for head nurse and staff nurse, a sample nursing care plan, and a job analysis form are included in the appendixes.

Pardee Geraldine
University Hospital, Seattle.
Classifying Patients to Predict Staff Requirements.
Pub. in American Jnl. of Nursing p517-520 Mar 68.

An approach developed by the University Hospital in Seattle, Washington, for classifying patients according to their nursing needs is described. The approach allows the hospital to predict staffing requirements for individual nursing units. As a first step, a form was developed by which each patient on a given unit can be categorized depending on the amount of nursing time his condition and treatments indicate he will require. Three categories contain criteria for patients requiring a minimal amount of nursing care, a moderate amount, and the greatest amount of nursing care. The criteria used included the most common conditions, procedures, and treatments requiring direct nursing care of a patient. After the patients on any unit were classified, the required hours of patient care for that unit could be hand - computed by using staffing figures adapted from a study conducted at Akron Children's Hospital. The method consists of totalling the number of patients in each category, multiplying each total by the amount of required nursing care time appropriate to the category for each shift, and adding the predicted times for each category to obtain the total hours of required patient care for that day during all shifts. The number of nursing employees required to provide the hours of direct patient care can then be determined. Data so collected were recorded over a four - month period so that staffing patterns could be identified for each of the hospital's seven nursing units. Analysis of these patterns led to identification of staffing problems and improvements in utilization of float nurses and in patient care.

Patterson Dorrie
Exercise in Patient Classification as a Means of Calculating Staffing Requirements U.H.W.I. Mona.
Pub. in Jamaican Nurse v16 p6-8 May 76.

A patient classification study undertaken at University Hospital of the West Indies as part of an examination of the hospital's staffing practices is described. The purpose of the overall study was to determine whether the existing

system of assigning numbers of nursing personnel to clinical areas was adequate and, if the system was found to be inadequate, to establish a better method. The objectives were as follows: (1) categorize all patients according to their requirements for nursing care in each of 12 medical and surgical wards; (2) to estimate the amount of nursing time required by each category of patient during the day; (3) to calculate the total amount of nursing time required by all patients in each ward and the number of nursing personnel needed to meet that requirement; and (4) to compare the calculated number of required nursing personnel with the actual number of assigned personnel. Using a form to categorize patients' personal care, feeding, observation, ambulation, and personnel requirements as intensive, minimal, or average, nurses recorded the requirements of all patients on a daily basis. Of an average 21.4 patients per ward, 8.1 needed minimal care, 11 needed average care, and 2.3 needed intensive care. The formulas used to calculate the amount of nursing time and numbers of nursing personnel required on each ward are presented. A copy of the checklist used to classify patients is provided.

Pinel C, Seriki C
Nursing Establishments in Geriatric Hospitals.
Pub. in Nursing Times v72 n22 p850-853 Jun 76.

Plummer Johanna
Kingston General Hospital (Ontario).
Patient Classification Proves Staffing Needs.
Pub. in Dimensions in Health Service v53 n5 p36-38 May 76.

Kingston General Hospital (Ontario, Canada) has implemented a patient classification scheme that has facilitated the staffing of units and has eliminated many frustrations for the supervisory staff. Motivated by economics, the hospital signed a 1-year contract with the Medicus Corporation of Chicago to develop classification of patients by need, computerized preferential scheduling for staff, monitoring of quality patient care and management reporting. A team moved into the hospital and spent 3 months getting to know the staff and assessing the situation. Each staff member was interviewed regarding preferences in scheduling, and nursing staff participated in the committee work involved in patient classification. The nursing staff was educated to the system before the first two nursing units were used in a pilot project. The system calls for part-time or full-time floating staff either in or out of wards, according to the needs. There are four classification categories based on number of hours of care per 24 hours: (1) patients requiring 0-2 hours of direct care; (2) patients requiring 2-4 hours of direct care; (3) patients requiring 4-10 hours of direct

care; and (4) patients requiring more than 10 hours of direct care (usually an intensive care patient). The system involves classification of the patients by the types indicated and other information regarding special need; the staffing coordinator has a single workload index for each unit by 8:30 a.m. daily. Initial implementation and orientation took approximately 2 weeks. A sample classification sheet is provided.

Rhodes M
Understaffing.
Pub. in Nursing Mirror and Midwives Jnl. v46 n6 p29 9 Feb 78.

Ryan Joseph R, Boydston Gordon D
Kearney (A.T.), Inc., Chicago, Ill.
This Flexible Staffing Plan Puts Nurses in Right Place at Right Time.
Pub. in Modern Hospital v105 p114-117 Sep 65.

The development of a flexible staffing table as the basic tool of a system for assigning nursing personnel on the basis of patient census and intensity of nursing care required by patients is described. Development of flexible staffing tables requires precise information about nursing personnel requirements at each skill level and under varying conditions. This information can be obtained by a nursing personnel utilization study, an objective procedure for developing tables, personnel budgets, and work schedules. The steps involved in such a utilization study, based on work sampling techniques, are described. The work sampling study results in three reports: (1) the hours of care required, by level of skill, for each patient classification on each nursing unit; (2) the distribution of the time spent, by each job classification, on each nursing unit; and (3) the total hours for each activity, by level of skill, for each hour of the day. The first report reveals how the mix of patients affects the number of hours of each level of skill required on a patient unit. This information can be used in determining how the amount of time and the mix of skills should be adjusted as changes occur in the patient census and the intensity of nursing care required on a patient unit. The second report, showing the distribution of time spent by each job classification on the unit, can be used to improve the utilization of skill. The third, which shows how work tends to become concentrated in certain hours, can be used in improving work plans and schedules. Analysis of the three reports results in suggested changes in assignments of personnel and proposals to improve methods and procedures. When the suggested changes are approved by nursing management, training is provided in the new methods, and appropriate staffing tables are developed. An example of a

staffing table and a description of its application are included. It is noted that the flexible staffing system allows an objective assessment of unit staffing requirements by the head nurse and her supervisor.

Ryan Tula, Barker Betty L, Marciante F. Anthony
John C. Lincoln Hospital, Phoenix, Ariz.
System for Determining Appropriate Nurse Staffing.
Pub. in Jnl. of Nursing Administration v5 n5 p30-38 Jun 75.

The nurse staffing system employed at the John C. Lincoln Hospital in Phoenix, Ariz., is described. The system includes an assessment of nursing care needs, flexibility in the assignment of staff so that nursing functions are performed by personnel with appropriate knowledge and skills, and data to compensate for understaffing or overstaffing. Elements of the classification of nursing service activities developed by Kakosh are listed: direct nursing care activities, indirect nursing care activities, security activities, coordination of professional services, hospital technical service activities, institutional service activities, personal services, and nonrecurring activities. An acuity rating guide is presented which incorporates patient baths, activities, medications, treatment, dietary needs, vital signs, social needs, special tests, respiratory needs, and special factors for evaluation. The development of the staffing system at the John C. Lincoln Hospital is reviewed. Forms used in the staffing system are included (an acuity rating sheet and an acuity report). The results of an engineering study to devise staffing tables for patient acuity point ratings and shift and skill levels of nursing hours for each nursing unit are presented. Tabular data are provided on the skill level distribution of medical-surgical nursing time and on nursing hours.

Scannell J. Gordon, Brown Grace E, Buckley Mortimer J, Ebert Paul A, Laufman Harold
Inter-Society Commission for Heart Disease Resources, New York.
Optimal Resources for Cardiac Surgery: Guidelines for Program Planning Evaluation. Report of the Inter-Society Commission for Heart Disease Resources.
Pub. in Circulation v52 n5 pA23-A41 Nov 75.

Guidelines are presented for establishing the optimal environment for the performance of cardiac surgery, and criteria for evaluating existing facilities and for long-range hospital planning are suggested. The status of cardiac surgery in the United States is reviewed, and measures for assessing a hospital's ability to support a cardiac surgical service are described. Guidelines reflect

the experience of practicing cardiac surgeons, cardiologists, and nurses, and represent the clinician's point of view on resource requirements. Recommendations are presented relative to appropriate caseloads for cardiac surgical programs; qualifications for the professional staff and staffing requirements for a cardiac surgical program; the role of the nurse in the field of cardiac surgery; allied clinical services required by cardiac surgical programs; special considerations for pediatric cardiac surgery; and physical plant and equipment needs. Detailed specifications for the hospital's physical plant and equipment include a protocol for checking the electrical safety of surgical suites. A data base for carrying out regular inventories of community cardiac surgical programs is suggested. Sample forms for such a data base are appended.

Seay Audrey B, Wright Phyllis
Michigan Univ., Ann Arbor. Program in Hospital Administration.
Nursing Staffing Decisions.
82p 1975 Available from University Microfilms International, 300 N. Zeeb Road, Ann Arbor, MI 48106.

Data gathered on four medical units and four surgical units at Oakwood Hospital, Dearborn, Mich., are used to compare two approaches to determining nurse staffing needs. One approach to staff allocation uses a patient classification scheme to determine patient care needs. The second approach uses a list of specific nursing activities as the basis for determining staff requirements. The latter approach is found to involve a lengthy procedure that probably would not be practical at Oakwood. The patient classification method appears simpler and requires less time. Examination of the data gathered over an 18-day period for the 8 units shows that the nursing care needs of the medical units remained high throughout the week, whereas nursing care needs on the surgical units decreased on the weekend. In general, nursing care needs were higher on the medical units than on the surgical units, although the actual hours of nursing care provided were greater for the surgical units than for the medical units. The possibility of a shift of nursing personnel from the surgical units to the medical units is raised, as is the need for a float system to deal with the considerable variance in staffing requirements on any given unit. Supporting data, a review of literature on staffing methods, and a selected bibliography are included.

Simborg Donald W
Johns Hopkins Hospital, Baltimore, Md. Dept. of Biomedical Engineering.
Rational Staffing of Hospital Nursing Service by Functional Activity Budgeting.
Pub. in Public Health Reports v91 n2 p118-121 Mar-Apr 76.

The measurement of the utilization of nursing services and the justification for monies spent on nursing services is discussed. It is concluded that the need for nursing services varies significantly from day to day in a hospital providing care for the acutely ill, and that nursing need does not necessarily correlate with the hospital's patient census. It is felt that a patient care classification system cannot determine nursing workload. A group of physicians and nurses at Johns Hopkins Hospital in Baltimore, Maryland, proposed a list of nursing activities that should be considered in budgeting for nursing staffing. The measurement of these activities was computerized based on standard times needed to perform the various tasks. This approach separates quantifiable components of nursing care from arbitrary or nonquantifiable components. A dollar value is placed on each component of nursing services, and these sums can become the basis for budget justification. Functional activity budgeting also enables the utilization review of physicians' use of nursing services. This form of budgeting is only applicable if the major time components of nursing care -- those reflected in physicians' and nurses' orders -- are easily quantified, using a computer system.

Simpson R
Development and Nurse Staffing of Adolescent Psychiatric Units. 2.
Pub. in International Jnl. of Nursing Studies v10 n4 p239-251 1973.

Smith Carol A
Children's Memorial Hospital, Chicago, Ill.
Adequate Staffing -- It's More than a Game of Numbers.
Pub. in Nursing Administration Quarterly v1 n4 p15-25 Summer 77.

Nursing administrators at Children's Memorial Hospital in Chicago, Ill., discovered that the traditional use of nursing care hours to project staffing requirements and the personnel budget had led to a lack of adequate staff to provide optimal patient care. A consulting firm was hired to conduct a staffing study and to help institute improved staffing management systems. The staffing system which was to be established was aimed at providing a measurement of nursing workload as a basis for long-range and variable (daily)

staffing. A patient classification tool specific to the care needs of children was developed by a committee composed of four head and four staff nurses, in cooperation with the consultant firm. This classification form was first tested on four units and its use was then expanded to include all inpatient units. Questionnaires on task difficulty were developed specific to each unit, shift, and personnel type and administered to a maximum number of personnel in order to determine a numerical value for the difficulty of performing each assignment element included in the survey. The already existing audit committee was trained to conduct quality of care assessment based on a tool developed by the consultant. Reviews were conducted in all inpatient units on all three shifts in order to generate baseline data. Quality assurance reviews are now conducted quarterly in order to plan inservice training programs on the unit level as needed. A float pool has been utilized to permit flexibility within the staff with limited pulling from unit to unit.

Stevenson Joanne S, Brunner Nancy, Larrabee Jean
Ohio State Univ., Columbus. Center for Nursing Research.
Plan for Nurse Staffing in Hospital Emergency Services.
63p 1978 Available from National League for Nursing, 10 Columbus Circle, New York, NY 10019.

The need to improve the allocation of nursing personnel resources in the emergency care services of the Ohio State University Hospitals resulted in the development of an emergency patient categorization system that could be used in planning nurse staffing. A model was developed based on the hypothesis that emergency care demands are patterned phenomena that can be studied, simulated, and predicted within acceptable confidence intervals. During the first phase of the study a set of criteria for categorizing the emergency patients according to nurses' perceptions of needs for nursing care was developed. These criteria, based on nursing actions, patient characteristics, and priority for care, resulted in a four-level system of categorization. The second phase of the study provided a quantitative measure of the nursing workload generated by the direct care of patients in each of the four categories. The data analysis in this phase was primarily focused on registered nurses and patient care technicians since data about other personnel were insufficient for analysis. During the third phase of the study, a technique for identifying patient demand patterns was implemented. This technique, which produced a graphic model of patient demand, composed a pattern of patient arrivals for each 2-hour interval over a 4-week period and a superimposed distribution of patients by category in each 2-hour interval for 1 of the 4 weeks. The technique provided a procedure for obtaining ongoing data about the pattern of patient arrivals by category over time, so that arrivals in

the future can be predicted and nurse staffing planned accordingly.

Thurman Richard L, Snowe Robert J
Missouri Univ., St. Louis. Dept. of Behavioral Studies and Research.
Nurse Practitioner and Institutional Facilities for the Mentally Retarded -- Are They Compatible.
Pub. in Jnl. of Psychiatric Nursing and Mental Health Services v14 n5 p7-10 May 76.

Potential areas of professional service and development for nurse practitioners are identified in State-operated residential facilities for the mentally retarded. Traditionally, institutional facilities have difficulty recruiting and staffing their medical services with physicians because salaries are not competitive with what a physician can potentially earn elsewhere. A nurse practitioner can perform many of the routine physician duties. The institutional shortage could be alleviated by adopting a staffing plan that included a physician as medical director and supervisor of several nurse practitioners. Other positions within an institution that can be filled by nurse practitioners are director of nursing services, director of inservice education, and director of health-care services of the aftercare department. Such positions would allow nurses to practice their skills, leaving the clerical and scheduling tasks usually performed by nurses for clerk-typists. Nurse practitioners can function as unit directors, aftercare nurses, and health service troubleshooters. In addition to providing new professional opportunities, employment in State facilities usually carries the enticement of work-study plans for furthering professional education. Thus a nurse could locate a position at such an institution and develop an educational program leading to a position of certified nurse practitioner.

Transaction Systems, Inc., Atlanta, Ga.
Overview of Staffing and Systems for U.S. Public Health Service Hospital and U.S. Indian Health Service Hospital.
268p 5 Apr 74 Available NTIS PB-248 736/1

The objectives of these overview studies are as follows: (1) To provide initial quantification of staffing requirements in the following departments: Medical/Surgical Nursing and Building and Grounds at the Public Health Service Hospital; (2) to provide documentation of the most significant problems relating to each department; (3) to establish priorities for further study, based upon the results of the overview studies and the expected results of further analysis; (4) provide an external review of staffing standards work conducted by

Indian Health Service; (5) provide comparative analyses with the PHS hospital study where applicable; (6) assess the degree to which organizational or facilities design constraints may interfere with the most efficient use of nursing manpower. (NTIS)

Transaction Systems, Inc., Atlanta, Ga.
Overview of Staffing and Systems for U.S. Public Health Service Hospital.
198p 20 Sep 74 Available NTIS PB-247 539/0

The purpose of the report is to provide reliable estimates of nursing personnel staffing requirements at the Public Health Service hospital at Staten Island, N.Y. and to provide data for input into the planning process. Methodology: (a) Data collection included: (1) on-site data collection of patient workloads for number and acuity of patients by levels of nursing skill; (2) observation of work layout, procedures, etc; and (3) historical workload data; (b) actual was compared to recommended staffing by weekday, weekend, shift and skill level. Conclusions: (a) Nurse audit plan is beginning to be implemented: (b) More Registered nurses, less Licensed practical nurses and more nurses aides needed; (c) more outpatient resources and slightly less inpatient resources needed. Recommendations: (a) Recommended better uses of nursing personnel; (b) medical staff should set criteria and document care being given to patients to meet Professional standards review organizations, JCAH and third party payors standards in preparation for future program participation. (NTIS)

Tri-State Area Health Planning Council, Inc., Evansville, Ind.
Open-Heart Surgery and Cardiac Catheterization, Standards and Criteria.
15p 1975 Available NTIS HRP-0003672

Criteria and guidelines are presented for use in reviewing proposals for new or expanded programs for open-heart surgery and cardiac catheterization in the Tri-State area centered in Evansville, Indiana. Techniques used in the two procedures are described. In interpreting need for appropriate programs and facilities, it is noted that the minimum utilization for an open-heart unit is four procedures per week; optimal population base for an open-heart unit is between 1 and 1.5 million. Service area documentation and auxiliary service utilization requirements for proposed open-heart services are described. Facilities wishing to expand open-heart capacity should have a current mortality rate no greater than 10 percent. Manpower considerations (cardiac surgeons, anesthesiologists, cardiologists, cardiovascular radiologists, cardiac arteriographers, nurses, pump operators

(heart-lung machine), biomedical engineers, etc.) are set forth, as are requirements for facilities and equipment for both procedures. A glossary of relevant terms is included.

Underwood Alice B
Chicago Univ. Hospitals and Clinics, Ill. Arma Wyler Children's Hospital.
What a 12-Hour Shift Offers.
Pub. in American Jnl. of Nursing v75 n7 p1176-1178 Jul 75.

Nurses in a pediatric intensive care unit experiencing staffing problems made a successful change to a 12-hour shift. The original staffing pattern at the Wyler Children's Hospital (Chicago, Ill.) called for two nurses for four patients per 8-hour shift. This arrangement proved inadequate, however, and the staff was working overtime to provide the necessary 3-to-4 ratio. It was decided that the unit would experiment with two 12-hour shifts, which would permit the nurses to work 3 days one week and 4 days the next. Three nurses would be present on each shift. The agreement for the 3-month pilot study specified that all registered nurses except the head nurse would work the prescribed schedule (7:00 a.m. to 7:30 p.m. and 7:00 p.m. to 7:30 a.m.), that the nurses would receive a 30-minute lunch break and two 15-minute rest periods per shift, and that they would receive overtime compensation at one-and-one-half times the basic hourly rate after 40 hours in a calendar week. An assessment of the change after 3 months indicated that nurses spent fewer days on duty, were involved in less commuting, had safer traveling hours, had overtime in every paycheck, spent less time away from the bedside, and could develop a closer rapport with patients. The management was able to cover their sick days and overtime needs more easily. It was also found that fewer staff positions were needed. At the end of 10 months, the staff indicated a desire to stay on the 12-hour shift. A sample scheduling sheet is included.

Valley Hospital, Ridgewood, N.J.
Staffing and Training for Intensive Care. Symposium on Intensive Care Units.
Pub. in Medical Clinics of North America v55 n5 p1127-1140 Sep 71.

Activities undertaken by the nursing service of a 325-bed acute care general hospital in anticipation of the establishment of a new eight-bed medical-surgical intensive care unit are described. Nursing service activities concentrated on the following: (1) participating, through representation on committees, in decisions determining nursing practices and procedures in the intensive care unit; (2) selecting and appointing a nursing supervisor; (3)

establishing a nurse-patient staffing ratio; (4) assisting in the development of an intensive care unit course for nursing personnel; (5) coordinating the specific aspects of the training course; (6) assisting in the design of records and forms for use in the unit; and (7) setting minimum criteria for selection of personnel seeking assignment to the intensive care unit. Following an outline of questions which can be utilized by any nursing service administration in preparing for an intensive care unit, the aspects of staffing, training program development and implementation, and development of patient records are discussed in detail. The establishment of nursing prerogatives, i.e., the parameters within which nurses have the authority to act in the absence of a physician in the intensive care unit, is considered briefly. A proposed instructional program for training intensive care unit nurses and sample copies of patient forms for the unit are included. A bibliography is provided.

Walsh P. A
Mental Illness, Mental Handicap and the Nursing Service Establishment: An Alternative Approach.
Pub. in Jnl. of Advanced Nursing v1 n4 p283-292 Jul 76.

A behavioral framework for establishing nurse staffing needs in institutions serving the mentally ill and mentally handicapped is proposed. The basic premise of the proposed model is that people are admitted to a psychiatric facility because of the behavior or lack of behavior they exhibit. Promoting change to an alternative behavior is the function of the hospital. The nurse's role and functions must be defined before staffing requirements are established. The role of behavior modifier, it is noted, is the natural and logical one for nurses. Within the behavioral framework, problem behavior is broken down topographically. For example, a patient who exhibits 'untidy' behavior is found to have difficulty in shaving. This difficulty is caused by the patient's reluctance to use a mirror. The nursing action is directed toward helping the patient overcome the basic problem, rather than toward the general behavioral problem of untidiness. The effectiveness of nursing can be tested by applying the criteria of targets reached as a measure of success or failure. Levels of care, arrived at through the systematic solution of each problem, can be used as a standard of reference in analyzing staffing needs. The advantages of the behavioral model in terms of practicality, the generation of quantifiable data, and the ease with which problems can be addressed are pointed out. A schematic diagram of the proposed model is included.

Warner D. Michael
Nurse Staffing, Scheduling, and Reallocation in the Hospital.
Pub. in Hospital and Health Services Administration v21 p77-90 Summer 1976.

Research directed toward the development of measurement and decisionmaking systems to improve nurse staffing, scheduling, and allocation is reviewed. Staffing decisions require the most resources and have received the greatest amount of attention in research efforts. Three major stages in a staffing methodology are enumerated: patient conditions must be classified in relation to their need for nursing services, time standards must be developed to relate patient conditions to required levels of nursing skills, and a method must be devised to convert the amount of time spent on patient care by various skill levels of nurses into appropriate staff levels and skill mixes for each nursing unit and shift. Numerous studies on the development and implementation of staffing decisions are cited. Criteria for evaluating scheduling methodologies or systems are listed. They are concerned with coverage, schedule quality, stability, flexibility, and cost. Different approaches to scheduling are described. Studies dealing with reallocation decisions are noted. It is recommended that reallocation and scheduling policies be formulated as staffing decisions are made. A list of references and sample schedules in tabular form are provided.

Werner June, Church Olga, Esposito Nancy T, Anderson Rhonda, Arp Selma
Evanston Hospital, Ill.
Evanston Story: Primary Nursing Comes Alive.
Pub. in Nursing Administration Quarterly v1 n2 p9-50 Winter 1977.

The primary nursing care model implemented at the Evanston Hospital, Evanston, Illinois is detailed. Efforts to improve the nursing department at the hospital from 1966 to 1971 were based on three premises: (1) the department was to be administered as a facilitative model; (2) leadership staff in the department were to be selected on the basis of their clinical excellence and leadership potential; and (3) department policy was to be developed collaboratively, seeking consensus rather than by majority rule. Professionalism was to be based on accountability. A work assessment project was initiated in 1971. Major objectives included formulation of a nurse staffing and scheduling system based on patient needs, and the analysis of the organization and functions of personnel involved in patient-care delivery. A modular nursing model was developed in which patient care is performed by one or two nurses who are assigned to a relatively small group of patients.

Qualified registered nurses function as leaders. The experiences of nurses at the Evanston Hospital during and since the implementation of modular nursing are reported. These experiences deal with the provision of primary care nursing and its evaluation, the establishment of a pilot unit for primary care nursing, fiscal management, and the relationships between primary care nursing and the pharmacy and the use of a unit dose system for medications, with discharge planning, with the specialty unit, and with the student. A schematic for the cost-effective organization of a nursing department is included.

Wilczynski Jerome B, Szczechowski W
Community Systems Foundation, Ann Arbor, Mich.
Evaluation of Nursing Services.
39p Oct 72 Available from Community Systems Foundation, 1130 Hill St., Ann Arbor, MI 48104.

The second phase of a study undertaken to assess and revise a hospital's procedures for determining nurse staffing requirements and allocating nursing personnel is documented. The report includes an outline of the study's objectives, recommended staffing patterns for the facility (by nursing unit, shift, and skill level), and a comparison of the recommended staffing levels with the levels in existence prior to the study. A cost comparison of the old and recommended staffing patterns shows an anticipated decrease of $162,442 per year as a result of implementing recommended changes. Staffing recommendations are also presented in regard to actual position assignments for each nursing unit and shift, preparation of cyclical schedules, requirements for full-time and part-time personnel, and vacations. A position control system for use in maintaining the proper number, mix of skill levels, and full-time / part-time balance for nursing personnel is described. Two management information systems -- an estimated earned hours report and a biweekly earned hours report -- developed to assist hospital administration and nursing management in the operation and control of the nursing service department are described. The results of a workload redistribution effort and a study of the clerical activities of the nursing office are also reported.

Wingate M. B, Silber T, McMillen M, Zeccardi J
Jefferson Medical Coll., Philadelphia, Pa.
Obstetric Care in a Family Health-Oriented University Associated Neighborhood Health Center.
Pub. in Medical Care v14 n4 p315-325 Apr 76.

The structure, staffing, and planning methods of the obstetric component of a family-oriented university hospital

family health care facility are described. In 1968, the Thomas Jefferson University in Philadelphia, Pennsylvania, opened a children and youth clinic to provide comprehensive health care to children below 19 years of age in a 30-block census area. Pregnant mothers of 13 families whose child or children were being cared for by the clinic were registered after being offered and accepting a total obstetric care program by the health facility. Eight pregnant patients from the community whose children were not in the children and youth clinic program were also offered obstetric care and they and their families were registered. Interview and screening procedures were adopted to develop a broad data base for total health care planning. Roles of the members of the multiprofessional team employed at the clinic are described, and particular emphasis is placed on the use of a nurse midwife as the primary obstetric care professional. Management procedures in the clinic program are examined, and the educational component within the program is mentioned. The children and youth program is evaluated in terms of clinical outcome, patient and professional acceptance, and cost.

Wollard Douglas K
Lutheran Medical Center, Wheat Ridge, Colo.
Shared Service Organizes Its Own Nursing Pool.
Pub. in Hospitals, Jnl. of the American Hospital Association p83, 86, 89 16 May 76.

An on-call personnel program for member hospitals of the Midtown Hospital Association in Denver, Colorado is described as a useful alternative to commercial personnel services. The Midtown Hospital Association is composed of seven member hospitals. In February 1973, the association implemented a program to provide nursing personnel on an on-call or as-needed basis to its member hospitals. Under the program, nursing personnel are sent into member hospitals upon request to compensate for census peaks, vacations, and employee absenteeism. In the first 1.5 years of program operation, the association filled over 5,000 shifts with registered nurses, licensed practical nurses, nursing aides, speech pathologists, and occupational and physical therapists. Organization, utilization, orientation, and scheduling aspects of the association's on-call personnel program are detailed. The program has demonstrated that the on-call concept can be used by hospitals in a cost-effective manner to enable them to staff effectively during months of high utilization while not being overstaffed during low periods. The program has also attracted qualified nursing personnel back into the field on a part-time basis while allowing them to function as housewives, students, and mothers.

II. SETTINGS: HOSPITAL OUTPATIENT

Comprehensive Health Planning Agency of Southeastern Wisconsin, Inc., Milwaukee.
Guidelines for Radiation Therapy.
19p Apr 73 Available NTIS HRP-0004084

Guidelines for development of radiation therapy services in southeastern Wisconsin are presented. The methodology used in developing the guidelines and a procedure for updating them are discussed. Demand for radiation therapy services in the area is projected. Organization for radiation therapy is discussed, emphasizing the need for coordination of referring physicians and technicians and development of a network of facilities of three basic types: major training and clinical radiotherapy facility with provisions for basic research (component of a cancer treatment center); major clinical radiotherapy facility with provisions for clinical research and affiliated training programs; and affiliated clinical radiotherapy facilities providing an optimum level of patient care but lacking some specialized resources. Size, number, distribution, and personnel requirements are specified for each category of facility. Included in staff function descriptions are radiation oncologists, radiologists, physicists, radiotherapy technicians, nurses, dosimetrists, radiobiologists, and residents and training fellows. Equipment necessary to provide radiotherapy treatment is described, as are supporting clinical facilities. Inpatient bed requirements, training programs, research programs, and organizational considerations are discussed briefly. A map of the planning area, depicting existing radiation therapy services by type, is included.

Computer Sciences Corp., Falls Church, Va.
Hospital Occupational Health Services Study. III. Organization and Administration of Hospital Employee Health Services. IV. Staffing of the Hospital Occupational Health Unit.
69p Aug 75 Available NTIS PB-266 242/7

A comprehensive survey of American Hospital Association members was made to determine the extent to which proposed criteria for effective occupational health and safety programs for hospital personnel can be applied. Statistical

information given is based on a questionnaire sent to 3,686 U.S. hospitals in 1972. Topics include: prevalence of formal employee health care programs; the primary source for day-to-day employee health care services; the locations used for employee health treatment; availability of employee health care units; and the extent to which employees were seen by a physician or nurse, both before going home due to illness or injury, and upon returning to work. (NTIS)

Gaul Kenneth E, Markowitz Walter L
Brentwood Health Center, N.Y.
Suffolk County Comprehensive Ambulatory Health Center Model.
76p May 75 Available NTIS HRP-0012147

A model for the organization and delivery of ambulatory health services in county health centers is presented. Developed by the Suffolk County (New York) Department of Health Services, the model is structured by program function. Each service is modular in design and can be added or deleted according to the demonstrated needs of community residents served by a particular health center. The sevices include direct patient care services (primary care services, specialty services, mental health services, and methadone maintenance); ancillary patient care services (radiology services, laboratory services, pharmacy); supportive health care services (public health nursing, home health services, social service, nutrition services, communicable disease control, immunization investigation, public health education); and supportive nonpatient care services (administration, intake / reception / financial, medical records, mental health clerical / reception / financial). Each service module includes a description of the program functions and specifications of staffing and space requirements. Floor plans are included for several of the modules. The Department of Health Services recommends that, when possible, health centers contract with community hospitals for backup services such as admission of patients when indicated and sophisticated radiological procedures. It is also noted that a minimum of 10,000 primary care patient visits is required to operate a health center efficiently and economically.

Home Nursing Agency of Blair County, Hollidaysburg, Pa.
Home Nursing Agency -- 5 Year Plan, 1977-1981.
72p 1975 Available NTIS HRP-0018949

A plan to guide the growth and activities of the nonprofit home nursing agency serving Blair, Fulton, Centre, and Huntington counties in south central Pennsylvania is presented. The agency's staff of 120 serves a predominantly rural area encompassing approximately 2,948 square miles.

The agency's philosophy, goals, and planning strategy are outlined. Demographic data on the service area are presented. Services essential to a comprehensive home and ambulatory health care program are defined, and goals and objectives relative to the provision of each service either directly by the home nursing agency or indirectly through arrangements with other providers are presented. Home service needs are projected through 1981 in the areas of nursing, physical therapy, occupational therapy, speech therapy, social services, home health aide services, and homemaker services. Assumptions underlying the service need estimates are explained, as are the methods used to arrive at the estimates. The agency's manpower needs are projected, and recommendations concerning staff qualifications are presented to guide manpower planning efforts. Staffing requirements are considered relative to the agency's special programs in maternal and child health, mental health, primary care, and volunteer services. The agency's space and financial requirements are also projected. A bibliography and supporting data are included.

Reid Richard A
New Mexico Univ., Albuquerque.
Work Sampling Study of Midlevel Health Professionals in a Rural Medical Clinic.
Pub. in Medical Care v13 n3 p241-249 Mar 75.

A work sampling study is discussed which was initiated to provide a comprehensive description of the tasks performed by midlevel health personnel in the rural component of an experimental medical care delivery system. The study was undertaken to determine what policy changes were needed to improve operating economies to enable the operation to achieve fiscal viability. The investigation determined the proportion of time spent on various activities by the staff members (a family nurse practitioner, a laboratory aide, and a clerk-receptionist supervised by physicians at an urban medical center by means of telephone communications). More than 800 observations of the three staff members were recorded on ten randomly selected days. Work sampling results, summarized in tabular format, were considered within a comparative framework to qualitatively assess performance. Two alternative staffing configurations were designed as a result of the study, and shortly after completion of the study, the administration of the project was assumed by a private agency. Several decisions were implemented for the purpose of reducing overhead expenses, including the first alternative staffing configuration, and major policy modifications recommended in this study. It now appears that the delivery system is self-supporting.

Roberts Doris E
Public Health Service, Washington, Md. Div. of Nursing.
Staffing of Public Health and Outpatient Nursing Services, Methods of Study.
125p 1963 Available from Q Corp., 49 Sheridan Ave., Albany, N.Y. 12210, $1.25.

A guide to assist public health agencies, including hospitals, to determine the number and composition of nursing staff necessary to carry out programs in public health and outpatient services is provided by the World Health Organization. General principles of staffing are explained as the basis for exploring staffing plans most appropriate to particular agencies and communities. Among the factors influencing staffing patterns are: population characteristics, characteristics of the nursing services, and professional group characteristics. Before staff requirements can be estimated, several planning decisions must be made. These include: selecting a method of analysis, determining data required for analysis, pre-testing of study methods, and obtaining job descriptions for all workers in the nursing department. A basic method for determining staff requirements is described in detail, followed by general descriptions of other methods of studying nursing staff requirements. These are all illustrated by charts and tables and instructions for completing forms. Other tabular data and a bibliography are appended.

III. LONG TERM CARE SETTINGS

Bergen Thomas J
National Geriatrics Society, Milwaukee, Wis.
Survey of Nursing Care Requirements in Nursing Homes in the States of the Union. Update to April 1976.
140p 1976 Available NTIS HRP-0014974

A State-by-State compilation of rules, regulations, and standards governing the provision of care in skilled nursing homes, intermediate care facilities, and related institutions is presented. The April 1976 update of a manual originally published in 1973 offers excerpts from statutes and regulations setting forth staffing requirements for institutions providing various levels of long-term care, standards for the delivery of nursing services in such facilities, and policies and procedures for licensure and certification. For several States, definitions of relevant terminology and classifications of levels of long-term care are included. The manual includes entries for the following States: Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, and Montana. Information is also included for Nebraska, Nevada, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and the District of Columbia.

Birt Joyce, Pullman Robert A
Casa Blanca Convalescent Centers, El Cajon, Calif.
Staffing by Patient Classification.
Pub. in American Health Care Association Jnl. v2 n4 p75-78 Jul 76.

A staffing system for skilled nursing facilities (SNF's) in California is described. In the development of the staffing system, it was found that 95 percent of basic and special patient care services were performed by nurse aides and that the quality of medical care was inversely related to costs. Day shift nurse aides at selected SNF's were studied, and time standards were developed, evaluated, and documented. The worksheet completed by nurse aides is included. The form

contains three categories: basic care, special care factors, and special care (treatment). The time standard for each procedure under these categories is multiplied by its frequency to give the total time for that procedure. Daily routines of a nursing director, medication nurse, charge nurse, and registered nurse are outlined. It is felt that the method for determining nursing personnel to patient ratios can provide quality care within economic limits of funding.

Bureau of Labor Statistics, Washington, D.C.
Industry Wage Survey -- Nursing Homes and Related Facilities, May 1976. Bulletin 1964.
61p 1977 Available from Supt. of Documents, U.S. Government Printing Office, Washington, DC 20402. Stock No. 029-001-02046-5.

The results of a Bureau of Labor Statistics survey of wages and supplementary benefits in nursing homes and related facilities in 21 major metropolitan areas are presented. Data as of May 1976 are provided on industry characteristics (employment, type of care provided, establishment size, ownership, unionization, and staffing), occupational earnings, establishment practices, and supplementary wage provisions (scheduled weekly hours, shift differential practices, paid holidays and vacations, health insurance, retirement plans, and prerequisites). Occupational earnings were highest in the New York City metropolitan area and lowest in Dallas-Fort Worth, Tex. Most professional employees were either general duty or licensed practical nurses. The average earnings of general duty nurses ranged from $4.59 to $5.86 per hour in 20 of the 21 areas studied. In New York City, $7.35 was the hourly average. Pay levels for licensed practical nurses usually fell between $3.50 and $4.50 per hour while head nurses earned between $5 and $6.50 per hour. Nursing aides averaged between $2 and $3 per hour in all areas except New York City, where they averaged $4.83 per hour. Other nonprofessional occupations were maintenance, housekeeping, laundry, and food service employees. Most professional and nonprofessional workers had paid holidays and paid vacations after qualifying periods of service. Various health and insurance plans were also available to a large number of workers. Extensive tabular data on the results of the survey are provided.

Cavaiola Lawrence Joseph
Johns Hopkins Univ., Baltimore, Md.
Unified Approach to Patient Classification and Nurse Staffing for Long-Term Care Facilities.
288p 1976 Available from University Microfilms International, 300 N. Zeeb Road, Ann Arbor, MI 48106.

An approach to determining optimal nurse staffing mixes, allocation, and assignment patterns in long-term care facilities is documented. The basis of the approach is the quantification of patients' nursing needs through intermediate steps of assessment and classification. The patient classification system is related to the demand for nursing services, as categorized by area of care, for each of three patient groups. Allocation and assignment of nursing care activities are modeled by means of mathematical programming techniques. The patient classification system was derived with nonlinear multiple regression techniques from a comprehensive patient assessment instrument consisting of 37 health status indicators. The basic staffing model, a mixed-integer linear program, maximizes an objective function that combines concepts of appropriate assignment of personnel to specific patient care activities and satisfaction of high priority demands. Model constraints include recognition of the availability of nursing resources, adherence to legal staffing requirements, and satisfaction of bounded demands by area of care and patient classification. Two extensions of the model make it possible to compare alternative staffing policies. In a test application to data from an existing long-term care facility, the basic staffing model displays a fairly high degree of sensitivity to its parameters. Details of the model, supporting data, and a bibliography are included.

Comprehensive Health Planning Association for the Metropolitan Portland Area, Oreg.
Report of the Long Term Care Task Force. Report 1: Nursing Homes.
104p May 75 Available NTIS HRP-0004205

A plan for development of nursing homes in the four counties comprising the metropolitan Portland, Oregon, area is presented. The nursing home plan represents one aspect of the long-term care planning program, with other facilities and possible alternatives to institutional care to be considered in the future. This plan addresses two forms of institutional nursing care: the skilled nursing home and the intermediate care nursing home. Following a description of the methodology used in developing the plan and of data requirements defined in the initial work program, guidelines for planning decisions are presented with regard to need, patients, staffing, and institutions. Demographic

projections and estimates of the population to be served by nursing homes are presented for the planning area and for each county. Inventories and utilization statistics are presented for existing facilities in each county, and methods used to project the demand for future services are described in detail. Nursing home construction and operation costs, nursing home charges, subsidy of welfare patients by private pay patients, and costs of public welfare to the community are discussed. Staffing patterns of registered and licensed practical nurses in nursing homes are examined, and quality of care measurement is discussed briefly. Mental health concerns related to long-term institutionalized care are considered, with reference to a nursing home survey conducted by the Oregon Health Care Association in July, 1974. A checklist is provided to assist the consumer in evaluating individual nursing homes for a potential patient. Appendices include the demand formula data base and a membership roster for the Long Term Care Task Force. Twenty-two tables, ten graphs, and two maps are incorporated in the text.

Ernst Marvin
Dallas Geriatric Research Inst., Tex.
Unit Coordinator-Resident Assistant. An Alternate Staffing Pattern for Long-Term Health Care.
Pub. in The Gerontologist v16 n1 pt1 1976.

An alternative staffing pattern for nursing homes is reported that emphasizes the coordination of service, the personalization of resident care, and the upgrading of staff input. The staffing pattern is termed the unit coordinator-resident assistant model (UC-RAM) and is based on elements adapted from three different approaches to staffing -- (1) unit management procedure; (2) integration of existing services, with one staff member given the responsibility for the total care of a certain number of residents; and (3) upgrading of staff members. The unit coordinator is responsible for overall administration and supervision of non-nursing functions. Specific duties include the arrangement and supervision of all necessary transportation for residents, the planning and coordination of individualized personal care plans, the filling out of work orders for maintenance and housekeeping, the coordination of meetings between nursing and non-nursing personnel, and the immediate supervision of personnel who provide direct services to residents. Resident assistants function as members of a team in providing services to a group of residents in a single unit. Their role is to insure that resident care plans are followed, and they serve as the integrating force for the provision of resident services. Based on a year of experience with UC-RAM, it is concluded that the model is viable as evidenced by the interface between supervision and care, the reduction in employee

turnover, and comments made by department heads. Modifications to improve the model's design are suggested followed by a list of references.

Feldman Janet, Hundert Mark
Rush - Presbyterian - St. Luke's Medical Center, Chicago, Ill.
Determining Nursing Policies by Use of the Nursing Home Simulation Model.
Pub. in Jnl. of Nursing Administration v7 n4 p35-41 Apr 77.

The use of a simulation model in evaluating alternative operating policies for a proposed long-term care facility is described. The proposed facility, a satellite agency of an urban university medical center, is being established to provide a wide range of health and social services for older long-term care patients. The nursing home simulation model is used to evaluate different systems of delivering care in the facility, the goal being to determine which set of operating policies will lead to the most efficient, effective nursing care. The model represents the operation of a nursing home by simulating the operation of individual nursing units and aggregating the results. The policy issues addressed in the planning of the proposed facility include staffing levels, scheduling of services, unit size, and prospective charge rates. The simulation model demonstrates that, to maximize the number of options available to residents and to maintain a reasonable cost of care, the nursing units should operate under a flexible schedule. The model shows that flexible operating policies will not be more expensive than rigid scheduling of services and that efficiency (utilization) and effectiveness (hours of nursing care applied) of the nursing personnel will be enhanced by flexible policies. The model is said to be a quick, easy method of evaluating and estimating the costs and benefits of proposed policies. Details of the model's input and output, a schematic representation of the model, and a discussion of its application in planning the proposed facility are included.

Froebe Doris J, Bain R. Joyce
DePauw Univ., Greencastle, Ind. School of Nursing.
Quality Assurance Programs and Controls in Nursing.
161p 1976 Available from C.V. Mosby Co., 11830 Westline Industrial Dr., St. Louis, MO 63141.

A guide to quality assurance programs (QAP's) and quality assurance controls (QAC's) is provided for those administering nursing care in episodic and distributive care settings. Systems and management science concepts are shown to form the basis for the subsequent development of QAP's and QAC's. These quality control concepts are illustrated by

histories, problem-oriented records, rounds, plans of care, audit, and client evaluation. Organizational analysis, leadership, and motivation are discussed as controls that nurses may apply in formulating a QAP. Six stages of change in implementing a QAP are suggested: identification, planning, implementation, stabilization, evaluation, and an alternative plan. Other aspects of QAP implementation protocol involve formal and informal communication networks, planning instruments, staffing, scheduling, and research. The future state of the nursing discipline is forecast, with the tools of management science providing a conceptual framework for the forecast of change within existing and emerging organizations providing health care. Appendixes contain a staffing pattern guide for hospitals, staffing pattern guide for nursing homes, staffing module, sample of staffing measured, and a master staffing pattern.

Hay Donald G
Profiles of Three Nursing Homes and a Long-Term Hospital in Scandinavia.
Pub. in Gerontologist v15 n4 p297-303 Aug 75.

Brief descriptions are presented of the facilities, staffing, programs of care, and patients of three nursing homes and one long-term hospital in Denmark, Norway, and Sweden. Site visits were made to nursing homes in Copenhagen, Bergen, and Oslo, and to a long-term care hospital near Stockholm. Certain key features found in all the facilities are said to offer challenges to nursing homes everywhere. Resident - centered living and care are the primary concerns of workers in the facilities. This patient - centered philosophy serves as an incentive for individual patients to take maximum responsibility for their own care and contributes to the self-esteem of patients. Long-term residents are encouraged to develop their individual capacities as much as possible. Relatively small patient units (24 to 30 patients) enable staff and patients to know each other and to develop a familylike atmosphere. Health care staff members and patients work together as a team. The facilities visited are integral parts of their communities and are generally in the mainstream of local health care. Their buildings are not set apart from the rest of the community, and there is considerable interaction between the institutions and their communities. Each facility performs some type of outreach function in the community through day care, meals on wheels, preschool programs, or participation in a general health care center.

Health Facilities Planning Council, Inc., Wilmington, Del.
Guidelines and Criteria for Planning Hospital and Related Health Services in Delaware.
16p Jul 67 Available NTIS HRP-0003691

Guidelines are presented for evaluating hospital construction proposals, specific services and/or programs, and proposed extended care and nursing home facilities in the State of Delaware, Salem County, New Jersey, and Cecil County, Maryland. Size of the facilty and the range of services to be given, specialized services, staffing requirements, finances, flexibility, and construction standards are to be considered in evaluating hospital construction proposals. Considerations in evaluating applications for modernization programs and for new obstetrical facilities are specified. In evaluating nursing home and extended care facility proposals, need, location, construction standards, staffing, hospital affiliation and transfer agreement, and financing should be considered. The necessity for a coordinated pattern of care, including prevention, early detection, diagnosis of all physical and mental illnesses, and rehabilitation of the disabled-- rather than medical treatment of bed patients only-- is stressed. The criteria presented indicate a desirable minimum bed capacity of 150 for general hospitals in rural areas, and 350 in urban communities. The guidelines are intended as a framework within which the Delaware Health Facilities Planning Council can carry out its responsibilities.

Health Planning Association of the Central Ohio River Valley, Cincinnati.
Report of the CORVA Drake Hospital Committee.
45p Nov 75 Available NTIS HRP-0007031

The report of the Central Ohio River Valley (CORVA) Drake Hospital Committee concerning the future role of that facility in the health care delivery system of Hamilton County, Ohio, is presented. In analyzing Drake's community role within the framework of the institution's stated purposes and objectives, the committee identified a number of problem areas. Present and potential problems were analyzed under the following headings: type of patient, scope of services, management problems, policy problems, medical staffing, physical and locational problems, financial problems, duplication of existing health services, and public image. It was concluded that the Drake facility should serve as a special nursing care facility to provide services for those who require a level of skilled care above that provided in a general nursing care facility, but not as comprehensive as that provided in a hospital. It is noted that, as a special nursing care facility, Drake would have a definitive role in health care delivery, would provide a level of care

vital to the community, and would promote continuity of care within the community's health delivery system. Recommendations conducive to implementation of this newly defined role are presented. Supporting materials, including a list of studies and reports utilized by the committee and a questionnaire used in interviews with staff of hospitals that refer patients to Drake, are appended.

Illinois State Dept. of Public Health, Springfield.
The Nursing Home Simulation Model Users Manual - FORTRAN IV Version.
296p Jun 75 Available NTIS PB-248 726/2

Two parallel concerns, adequacy of staffing and cost, are the basis for the development of the Nursing Home Simulation Model. The model was developed to help health planners, facility administrators, and regulatory agencies evaluate the effectiveness and efficiency of alternatively configured long-term care facilities providing different types of care to a variety of patient population. It can also evaluate the cost of effectiveness of meeting nursing care requirements of residents under alternative staffing configurations and systems for the delivery of care. The report describes the Nursing Home Simulation Model and the experiments that validate its characterization and evaluates its usefulness as a planning and regulatory tool for long-term care facilities. (NTIS)

Illinois State Dept. of Public Health, Springfield.
The Nursing Home Simulation Model Users Manual - Simscript 1.5 Version.
220p Feb 75 Available NTIS PB-248 862/5

Two parallel concerns, adequacy of staffing and cost, are the basis for the development of the Nursing Home Simulation Model. The model was developed to help health planners, facility administrators, and regulatory agencies evaluate the effectiveness and efficiency of alternatively configured long-term care facilities providing different types of care to a variety of patient population. It can also evaluate the cost of effectiveness of meeting nursing care requirements of residents under alternative staffing configurations and systems for the delivery of care. The report describes the Nursing Home Simulation Model and the experiments that validate its characterization and evaluates its usefulness as a planning and regulatory tool for long-term care facilities. Portions of this document are not fully legible. (NTIS)

Jennings Carole P
American Nurses Association, Washington, D.C. Government Relations Office.
Discharge Planning and the Government.
Pub. in Supervisor Nurse v8 n3 p48-52 Mar 77.

The role of governmental legislation and regulations on discharge planning by nurses is analyzed. Three major aspects of discharge planning and continuity of care are considered: (1) legislation and regulations influencing admission and discharge practices; (2) the role of health care providers in discharge planning as an integral component of patient care; and (3) the need for nurses to be aware of how legislation controls and dictates care. An overview of the regulatory process is presented. Legislation relevant to discharge planning is reviewed, with emphasis on the 1972 Social Security Amendments (P.L. 92-603), the establishment of professional standards review organizations and health maintenance organizations, Medicare and Medicaid, the Health Professions Educational Assistance Act, and the National Health Planning and Resources Development Act of 1974 (P.L. 93-641). It is noted that major issues related to discharge planning that are embodied in governmental regulations concern professional standards review organization and utilization review requirements, home health services, skilled nursing care, mandates for discharge planning under Medicare and Medicaid, the use of long-term care facilities, and the maximization of third-party reimbursement. Particular attention is given to discharge planning in skilled nursing facilities.

Liebman Judith S, Young John P, Bellmore Mandell
Illinois Univ., Urbana. Dept. of Civil Engineering.
Allocation of Nursing Personnel in an Extended Care Facility.
Pub. in Health Services Research v7 n3 p209-220 Fall 72.

A model for the assignment of direct care tasks to bedside nursing personnel is described. Using an ordinal scale of perceived effectiveness, the model generates daily task assignments indistinguishable from or superior to those used by nursing team leaders. A modification of the model has potential use in long-range planning of personnel needs, allowing comparison of alternative staffing patterns by their relative effectiveness profiles and facilitating cost / effectiveness comparisons. Twenty registered nurses, licensed practical nurses, and nursing aids in an extended care unit of a Baltimore rehabilitation facility provided the basis for the allocation model through a Q - sort procedure designed to measure these nurses' concept of effective personnel utilization. Computer-generated task assignments, based on these concepts, were validated for acceptability in a test in which the nurses compared 18 pairs of alternative

personnel assignments, some generated by the computer, and others by the nursing team leader. In six comparisons, the nurses showed no significant preference between the computer plan and the team leader's plan; among ten pairs in which a preference was established, the nurses preferred the computer-generated plan to the team leader's plan nine times. Modification of the model for evaluating alternative staffing configurations is demonstrated, showing the model's ability to generate 'team effectiveness' profiles which allow comparison of the dollar cost and perceived personnel effectiveness of alternative staff configurations when frequencies of direct-care procedures on the unit are known. A bibliography is included.

Lindsay Wardell, Dewitt Brent
National Center for Health Services Research, Rockville, Md.
The Nursing Home Simulation Model User's Manual - FORTRAN IV Version (Software Tape).
1 reel mag tape 1976 Available NTIS PB-249 491/2

Two parallel concerns, adequacy of staffing and cost, are the basis for the development of the Nursing Home Simulation Model. The model was developed to help health planners, facility administrators, and regulatory agencies evaluate the effectiveness and efficiency of alternatively configured long-term care facilities providing different types of care to a variety of patient population. It can also evaluate the cost of effectiveness of meeting nursing care requirements of residents under alternative staffing configurations and systems for the delivery of care. The report describes the Nursing Home Simulation Model and the experiments that validate its characterization and evaluates its usefulness as a planning and regulatory tool for long-term care facilities. (NTIS)

Litman Theodor J
Minnesota Univ., Minneapolis. Program in Hospital and Health Care Administration.
Syllabus on Long Term Care. Unit III: The Administrator and the Long Term Care Facility.
140p Apr 75 Available from Association of University Programs in Health Administration, Office of Long Term Care, 1755 Massachusetts Ave., NW, Suite 312, Washington, DC 20036.

Information on the preparation and role of the long-term care administrator and on the organization of long-term care facilities is presented in a syllabus intended as an instructional tool for use by faculty in graduate, undergraduate, and continuing education programs in long-term care administration. This final unit in a three - part series on long-term care describes the professional

attributes of the long-term care administrator, the administrator's education and experience, and the effect of federally mandated licensure on upgrading the knowledge and skill level associated with long-term care administration. The general organization of the long-term care facility and the specific functions of key departmental personnel are also discussed. The profile of the long-term care administrator draws on studies conducted at George Washington University and at Cornell University. The discussion of organization and management covers general administrative theory, manpower considerations, and administrative policy and procedures in the areas of admissions, operational standards and procedures, financial management, planning and construction. Administrative and staffing considerations are outlined for the following service areas: the medical staff and physician, nursing, medical records, dietary and food service, pharmacy, social service, housekeeping, laundry, occupational therapy, physical therapy, recreation, podiatric services, dental services, religious activities, and volunteers. Lists of readings are included.

Maine's Regional Medical Program, Augusta.
Survey of Nursing Home Staffing Patterns and General Needs in the State of Maine.
258p Oct 70 Available NTIS HRP-0002038

A study of the nursing homes of Maine was conducted by Maine's Regional Medical Program (MRMP) during the summer of 1970 to determine ways in which MRMP might assist the nursing homes and the Maine Department of Health and Welfare in their efforts to provide the best possible patient care. The administrators or head nurses of 131 nursing homes were interviewed via questionnaire. The questionnaire attempted to obtain information on ways in which nursing home personnel are trained and the resources available for continuing education. Other areas reviewed included the transportation services available to and needed by nursing homes, the connections and interactions of the nursing homes with the hospitals and physicians of their areas, and the availability of community home health services. In addition, the interviewers were asked to record their subjective evaluations based on their impressions after guided tours of the nursing homes. Findings indicated that 56 percent of the homes had trouble hiring personnel because of manpower shortages, with registered nurses being in shortest supply. Nearly half of the nursing homes had full-time or part-time directors of in-service education on their staffs. Only two of the 131 were having difficulty arranging transportation for patients from the nursing homes to the hospital in emergencies. It was found that most of the homes had a home health service agency in their area, and most of their patients were attended by private physicians.

McCaffree Kenneth M, Winn Sharon, Bennett Carl A, Morrow Gloria, Crowley David
American Health Care Association, Washington, D.C.
Cost Data Reporting System for Nursing Home Care.
368p Mar 77 Available NTIS PB-264 910/1

A uniform cost finding and reporting system was developed for nursing home care based upon patient conditions and characteristics. Cost data collection instruments were developed, and tested in a variety of facilities to determine their acceptability to both administrators and State Medicaid agency personnel. Information on the conditions and characteristics of 1,615 residents in 12 facilities, and on how direct care employee time, and therefore costs, varied among these residents, was obtained and analyzed to determine which conditions and characteristics were cost related. The system was tested in 29 facilities to allow adjustments of costs on the basis of patient characteristics and system evaluation. Products of this research are consistent with provisions of P.L. 92-603, Section 249, and can be useful as guidelines for setting staffing standards and for establishing reimbursement rate differentials between classes and/or groups of residents. (NTIS)

McKnight Eleanor M
Colorado Dept. of Public Health, Denver.
Nursing Home Research Study. Quantitative Measurement of Nursing Services.
60p Oct 70 Available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, $0.95.

A study intended to provide a basis for establishing minimal staffing patterns for nursing homes is presented. Nurse observers collected data on the nursing care of 195 sample patients in 14 nursing homes located in the Denver Metropolitan Area. Data were obtained on the number of specific nursing activities completed in 24 areas of nursing care; on the time required for the categorical levels of nursing personnel to perform these activities for ambulatory and bedfast patients with minimal, moderate, or maximum nursing needs; on the distribution of personnel by shift; and on the characteristics of the patients residing in the homes. The survey procedure is outlined and evaluated, and tables supplement the narrative description. The findings indicate that the size of the home has more influence on the nursing needs of the patients than the geographic setting. A significant difference is found in the average hours of daily care given by the different levels of personnel, with the aide giving the greater proportion of care and the registered nurse giving the least. Eighty-one percent of the nursing care rendered to the patients is given by the ancillary personnel; the licensed practical nurse provides 12 percent,

and the registered nurse gives 7 percent. The report suggests that the number and professional levels of nursing personnel be determined by the needs of the patients rather than by patient population.

Mid-Coast Comprehensive Health Planning Association, Salinas, Calif.
Nursing Homes in Santa Cruz County.
87p Jun 75 Available NTIS HRP-0005953

The current status of the 18 skilled nursing facilities in Santa Cruz County, California, is examined in this report to the Senior Citizens Advisory Committee of the County Board of Supervisors. A description of the national nursing home industry, the majority being for-profit enterprises, is given, together with an inventory of skilled nursing facilities in the area, and a profile of facility staffing. Social services offered by each facility are detailed, and a profile of Santa Cruz skilled nursing facility residents is given. Data on payment for nursing home care are divided into Medicare payments and MediCal payments. State standards required for licensing of the facilities are discussed, including a new law that changes the inspection and licensing process, and incorporates new standards which homes must meet before a license can be granted. The certification and accreditation processes, both voluntary, are described, and the recent consolidation of Medicare and MediCal standards is discussed. The purpose of the annual visits of the State medical review team to each patient is discussed, and some of the problems encountered when a MediCal patient is recommended for a move from level of care to another are explored. The role of the county is explained, including licensing options, patient advocate program, and social workers working with individual patients. The appendix provides a sample questionnaire of the statistical background survey.

Murnaghan Jane H
Johns Hopkins Univ., Baltimore, Md.
Long-Term Care Data. Report of the Conference on Long-Term Health Care Data.
233p 1976 Available from J. B. Lippincott Co., 521 Fifth Ave., New York, NY 10017.

Thirty working papers and recommendations for a minimum basic data set for long-term care facilities are presented in the proceedings from a conference attended by 48 providers, administrators, researchers, health information systems specialists, planners, and others. The proceedings open with guidelines and criteria for a long-term care data set and recommendations for the content, development, and

implementation of the data set. Working papers on basic data requirements discuss data requirements of nursing homes, rehabilitation services, home health care, and geriatric institutions and services; problems in assessing the health status and needs of the handicapped; limitations of the mental health data base; information for community planning and coordination of long-term care; staffing problems in long-term care; peer review in long-term care; and issues in designing a national program of long-term care benefits. Other papers concern methodologic problems of common terminology, measurement, and classification (e.g., modifications and new approaches to taxonomy in long-term care, description versus evaluation in long-term care data, generic services for long-term care patients) and the development of long-term care data systems (e.g., problems of data collection in long-term care, and examples of statewide and multistate long-term care data systems).

Orange County Health Planning Council, Tustin, Calif.
Guidelines for Long-Term Nursing Care.
25p 1974 Available NIIS HRP-0004380

Guidelines for use in the planning and review of long-term nursing care services (skilled care and intermediate care facilities) in Orange County, California, are presented by the Orange County Health Planning Council. The guidelines are intended primarily for use by the Council's planning and review committees and by local institutions and professional and consumer groups interested in long-term nursing care issues. Current data on long-term nursing care services in Orange County are presented, and trends affecting long-term nursing care are discussed. Sources of national and State standards relative to long-term care are noted, and requirements for grant, proposal, or program review are outlined. The following aspects of long-term nursing care service development are discussed: institutional planning and coordination, scope of services, records and reports, accessibility, acceptability, economic feasibility, professional standards and quality assurance, staffing (medical staff, nursing staff, and allied health personnel); and utilization standards and adjustment factors (including a formula for calculating need levels for skilled nursing services). Suggested minimum sizes for nursing care units are 100 beds for free-standing long-term nursing care units and 40 beds for long-term nursing units in hospitals. A bibliography is included.

Pinel C, Seriki C
Nursing Establishments in Geriatric Hospitals.
Pub. in Nursing Times v72 n22 p850-853 Jun 76.

Regional Health Planning Council of the North Central Texas Council of Governments, Arlington.
Dallas County Chronic and Long Term Care Study.
50p Mar 75 Available NTIS HRP-0003828

A study of chronic and long-term health care facilities in Dallas County was undertaken by the Dallas Geriatric Research Institute under the Joint Advisory Committee of the Dallas Health Planning Council to provide data for review and comment by the Council. Of 55 nursing home facilities contacted, 97 percent were interviewed. Supplemental information for each facility was obtained from the Department of Public Welfare, Austin, Texas. Data relating to organizational and operational characteristics, staff characteristics, resident origin, and legislative review and implications are presented in 15 tables. The findings suggest that projected bed needs for 1980 will be met through present and contemplated construction and that no general expansion is necessary. Other recommendations include encouraging nursing homes to retain skilled level care because of anticipated future requirements, and assessing proposed nursing homes on the basis of location, with preference given to those close to large concentrations of over-60 age groups. Access to manpower, to available medical personnel, and other health service facilities must be a consideration. Social support systems and therapist services are desirable. Other important factors are the recruitment and training of nursing aides and orderlies, enlisting community support, and the background and motivation of owners and administrators. A self-evaluation questionnaire for nursing homes is appended.

Smith W. Allen
North Carolina Univ., Chapel Hill. Dept. of Hospital Administration.
Planning Data: A Survey of Nursing Homes and Chronic Care Facilities. Volume III.
114p 1966 Available NTIS HRP-0002606

Findings of a study of nursing homes and chronic care facilities in the area under the jurisdiction of the Health Planning Council for Central North Carolina, are presented, with emphasis on their role in delivery of health care, their operation and utilization, and their ability to meet current demand. Information was acquired through personal interviews with administrators of the area nursing homes, using a questionnaire contained in the appendix as a guide. Types of ownership, types of homes, and types of care all were surveyed, and definition of terms is presented. An inventory is presented of: the facilities; staffing patterns; patient care; cost and charges; service area; age, sex and race of patients; types of accommodations; and utilization. Results

of the survey indicate a need for additional nursing home beds, and that this need will grow in the future. Chronic care facilities studied were identified as a tuberculosis hospital, a rehabilitation hospital, and a mental hospital. A description is given of each facility, detailing services offered. Exploration of the teaching activities of the area chronic care facilities has developed an inquiry into their need for trained health workers. When questioned, respondents representing chronic care facilities, indicated that the actual need was in excess of some estimates given, but that budgetary limitations precluded their inclusion. The mental hospitals indicated the greatest need.

TransCentury Corp., Washington, D.C.
Adult Day Care in the U.S.: A Comparative Study. Volume I. Executive Summary.
30p 2 Sep 75 Available NTIS PB-248 930/0

A representative sample of the known universe of 'adult day care' centers designed to meet health maintenance and social needs, and in some cases rehabilitative therapy needs, were studied. Findings showed that some of the centers serve patients with health care characteristics as varied as those exhibited by nursing home patients. Findings suggest that adult day care, when properly designed, may be a viable alternative to 24-hour inpatient care. From spectrum studied, two distinct models emerged, differentiated largely by the services provided, staffing patterns, participant characteristics, and operating costs. Model I is characterized by its relatively heavy emphasis on health services. Model II emphasizes day time supervision for generally less impaired (than Model I) participants. On the average, a tendency to give appropriate care is a special strength of adult day care programs. Those studied indicate a close match between staff health care capability and needs of the patients. Portions of this document are not fully legible. (NTIS)

Williams T. Franklin
Rochester Univ., N.Y. School of Medicine and Dentistry.
Staffing Problems in Long-Term Care.
Pub. in Medical Care v14 n5 Supplement p85-93 May 76.

The personnel needs of long-term care facilities are discussed, and data needs relative to solving the problems of educational preparation and staffing in long-term care are identified. It is noted that physician involvement in all stages of the long-term care process is necessary, as is the involvement of trained nurses, medical specialists, therapists, dentists, pharmacists, and others. It is suggested that the development and regular recording of

information on the health service needs of chronically ill and elderly patients is necessary for improving both the education of health care personnel and the staffing practices of long-term care facilities. Functional status and the nature of disabilities requiring assistance should be the focus of such records. The need for comprehensive medical / nursing / social evaluation of patients to determine appropriate placement and treatment is pointed out, as is the need for methods of classifying patient data to establish staffing requirements. Other data needs are in staffing characteristics (e.g., numbers of nursing personnel of various levels on duty on various shifts) and opportunities for continuing education in long-term care facilities.

Wisconsin Dept. of Health and Social Services, Madison.
Management Improvement Fund Proposal. Demonstration of PERC System in Two Regions of Wisconsin.
9p Jun 76 Available NTIS HRP-0016325

A method is described for improving the management of nursing home patient evaluation in Wisconsin. Evaluation is accomplished through the patient evaluation review committee (PERC) plan to assess patient needs, assign staffing patterns appropriate for needs, and reimburse in a manner consistent with staffing patterns. The PERC plan was formulated in 1973 in an attempt to correct deficiencies in the nursing homes of Wisconsin. Two tools were developed to assist in the implementation of PERC: (1) areas of care evaluation (ACE) and (2) time unit base (TUB) system. The ACE form permits evaluators to categorize patients according to their total needs. The TUB system correlates the patient profile with services appropriate for a particular patient. ACE was tested in 40 homes with 3,136 patients, ard activity data were collected from a subsample of 18 homes with 1,259 patients. Nineteen patient profiles were prepared. The PERC plan is shown to be an effective method for identifying specific areas of patient need, for determining appropriate staffing criteria, and for providing a means by which the Medicaid program can reimburse for specific service hours needed rather than reimbursing on a blanket coverage basis for services determined by negotiation. Wisconsin's Department of Health and Social Services plans to implement the PERC system in two regions of the State. Funding requirements for the system's implementation are presented in tabular form.

Yeager Robert L, Brightman I. Jay, Munroe W. G
Rockland County Health and Social Services Complex, Pomona, N.Y.
Chronic Disease Hospital: Role as Health - Provider Agency.
Pub. in New York State Jnl. of Medicine v75 n8 p1318-1326 Jul 75.

A survey of the types of patients served and the kinds of services offered at Summit Park Hospital, a chronic disease hospital in Rockland County, is reported. The objective of the survey was to determine whether the facility was playing a vital role or whether, as an attempt to make use of the resources of a former tuberculosis sanitarium, the chronic disease hospital was merely providing services that could be divided between general hospitals and nursing homes. The investigation included comparisons between 50 consecutively discharged patients from Summit Park and 50 patients discharged from a skilled nursing care facility nearby. Differences and similarities in the patients' general and medical characteristics, lengths of stay, and disposition are reported. A study of 50 inpatients at Summit Park provided a cross-sectional profile of the patient population, with emphasis on workloads, staff requirements, and alternatives that were available to each patient at the time of admission to Summit Park. It is concluded that the level of care offered at Summit Park is only slightly below that offered at general hospitals and is considerably above that offered in skilled nursing homes. Summit Park provides care at a savings to the public of over $400,000 per year, due to lower Medicaid costs in comparison to general hospitals. Supporting data and recommendations for expanding the facility are included.

Young John P
Johns Hopkins Univ., Baltimore, Md. Dept. of Health Services Administration.
Integrated System of Patient Assessment, Classification, and Nurse Staffing for Long Term Care.
87p 1976 Available NTIS HRP-0025149

This research study was an attempt to develop an integrated approach to patient classification and nurse staffing for long-term care facilities. A model was developed for patient assessment in order to classify patients into levels of care required. The classification system was then related to demand for nursing services, categorized by care areas for each of the three patient groups of the model: skilled nursing care, intermediate A care, and intermediate B care. Effective allocation and assignment of nursing care activities was modeled by means of mathematical programming techniques, making possible the presentation of alternative nursing strategies as a function of patient population mix

and cost constraints. The patient assessment instrument consists of 12 health status indicator variables based on the patient's ability to function, behavioral status indicators and medically defined conditions. A mathematical programming model was developed to estimate the staff required and its optimal mix of personnel, as well as to allocate nursing time and the assignment of skill levels to patient care demands. Model constraints included the availability of nursing resources, legal staffing requirements and adherence to bounded representations of patient nursing care activities. Extensions of the model were developed to explore alternative staffing policies based on variations in total patient-centered services and related to the personnel budget. Mathematical equations and tables pertinent to the study are included as well as a list of references.

Zilberbe J. S
Staffing Nursing Homes.
Pub. in Gerontologist v13 n3 p276 1973.

IV. STAFFING METHODOLOGIES:

MODELS AND STRATEGIES

Abernathy William J, Baloff Nicholas, Hershey John C, Wandel Sten
Harvard Univ., Cambridge, Mass.
Three-Stage Manpower Planning and Scheduling Model: A Service-Sector Example.
Pub. in Operations Research v21 n3 p693-711 May-Jun 73.

A staff planning and scheduling model is presented which has specific application in the nurse staffing process in acute hospitals and more general application in many other service organizations in which demand and production characteristics are similar. Aggregate planning models that have been developed for goods - producing organizations are not considered to be appropriate for many types of service organizations. In the staffing planning and scheduling model, the process for staffing services is divided into three decision levels: (1) policy decisions, including operating procedures for service centers and for the staff control process itself; (2) staff planning including hiring, discharge, training, and reallocation decisions; and (3) short-term scheduling of available staff within constraints determined by the previous two decision levels. These three planning levels are used as decomposition stages in developing a general staffing model. Planning and scheduling stages are formulated as a stochastic programming problem, an iterative solution procedure is suggested using random loss functions, and a noniterative solution procedure is developed for a chance - constrained formulation which considers alternative operating procedures and service criteria and permits including statistically dependent demands. The discussion includes an example application of the manpower planning and scheduling model and illustrations of its potential uses in the nurse staffing process.

Amenta M. M
Staffing Through Temporary Help Agencies.
Pub. in Supervisor Nurse v8 n12 p19-20, 23,. 25-26 Dec 77.

Applied Management Sciences, Inc., Silver Spring, Md.
Review of Health Manpower Population Requirements Standards.
94p Oct 76 Available NTIS HRP-0017491

Studies of health manpower / population requirement standards are reviewed, analyzed, and categorized in a report intended to provide a foundation for use by planning agencies in their assessment of local health manpower requirements. Manpower / population ratios are categorized in four groups: medical need based ratio, professional judgment based ratio, demand / productivity based ratio, and health maintenance organization (HMO) based ratio. Analysis of the four types of ratios indicates that need based standards are appropriate for planning only if consumers are willing and able to express all medical problems or demands for services. Acceptance of professional judgment based standards requires blind faith in the knowledge and foresight of those consulted, while adoption of HMO based standards (i.e., using adjusted staffing patterns developed in studies of HMO's) assumes that most care will be provided through a delivery mode that integrates finanacial and delivery system variables. Manpower requirement ratios derived from a review of some 200 articles and study reports are presented in tabular format for the following professions: medicine and medical specialties) and osteopathy, dentistry, pharmacy, optometry, veterinary medicine, podiatry, and nursing. The table is keyed to annotated references to the articles from which the ratios are derived. Suggestions for using the ratios in local planning are included, as are selected data on supplies of health professionals.

Applied Management Sciences, Inc., Silver Spring, Md.
Effects of Task Delegation on the Requirements for Selected Health Manpower Categories in 1980, 1985, and 1990.
202p May 74 Available NTIS HRP-0006201

The final report of a study to assess the impact generated by the spread of task delegation from highly trained health personnel to personnel classifications requiring less training and the impact of task delegation on manpower requirements in 1980, 1985, and 1990 is presented. The study's methodology was based upon a preliminary manpower requirements model developed by the Division of Manpower Intelligence (DMI) which uses present and future population estimates, applies different care utilization factors to different population cohorts, and projects future manpower requirements against baseline data. The following job categories were analyzed with respect to task delegation: dentists and dental auxiliaries; physicians and physician extenders; RNs, LPNs, and nurses's aides; and pharmacists and pharmaceutical technicians. If dental task delegation occurs, the requirement estimate for dentists will be four

percent less than those originally predicted by the DMI model for 1990. With task delegation and public acceptance of physician's extenders, the estimate of the need for physicians in the target years could be lowered by as much as 22 percent. Analysis of the nursing profession indicates that most of the task delegation from RNs to lower echelon personnel which can occur in hospitals and nursing homes has already taken place. As a result of increased task delegation to pharmaceutical technicians, a median estimate of between 31 and 37 percent fewer pharmacists in community pharmacies is forecast. All data are illustrated by charts and tables. Bibliographies are included for each chapter and a description of the DMI model is appended. Portions of this document are not fully legible.

Aydelotte Myrtle K
Iowa Univ., Iowa City. Coll. of Nursing.
Nurse Staffing Methodology. A Review and Critique of Selected Literature.
534p Jan 73 Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, $5.80.

Critical assessments of nearly 200 major methodological studies in the area of nurse staffing are presented, accompanied by a comprehensive bibliography of more than 1,000 such staffing studies. As a companion volume to a report of a conference on research on nurse staffing in hospitals sponsored in May 1972 by the Division of Nursing, Public Health Service, DHEW, the report also outlines the historical development of nurse staffing studies, provides a framework for classifying staffing methodology, and contains a glossary of terms used in staffing research. The literature review focuses on three major topics: (1) the relationship between the development of nursing service as an entity in itself and the growth of nurse training programs; (2) the establishment of standards for practice, education, and service; and (3) the evolution of other groups within the general occupations of nursing. The review reveals problems of definition of terms, of purpose, of qualification, and of utilization. Criteria for evaluation of staffing methodologies are suggested, and generalizations concerning the literature reviewed are offered. Two major deficiencies in the applications as of 1973 of work measurement techniques to studies of nurse staffing are noted: (1) the conceptualization of nursing practice derived from application of these techniques is limited in scope and character; and (2) data collection tools and procedures are 'markedly lacking' in objectivity, reliability, and accuracy. Books, monographs, research reports and theses, reports and terms papers, guides, manuals, pamphlets, and periodical literature are included in the critiques and the bibliography.

Baxter W. Eugene
Bass Memorial Baptist Hospital, Enid, Okla.
Substitute System for Rural Health Care.
59p Mar 76 Available NTIS HRP-0015608

Examples of the use of communication systems to provide backup for physician extenders serving remote areas are described, and a design for a system using two-way closed circuit television is suggested. Three of the systems observed use two-way television communication methods that appear to be acceptable for providing backup to the rural physician extender. One system provides backup to a nurse practitioner at Blue Hill Memorial Hospital in Maine via two-way television communication with physicians at the Island Medical Center at Stonington, Maine, and with physicians whose offices are located in an addition of the Blue Hill hospital. Another two-way television systems links the Logan International Airport Medical Station, staffed by a nurse practitioner, with the Massachusetts General Hospital in Boston. Cameras with remote zoom-in capabilities, telediagnostic equipment, and a telewriter for transmitting prescriptions make this the most sophisticated of the systems observed. A third project provides two-way microwave television communication between a group of physicians located at Farmington, Maine, and physician extenders in two satellite clinics. Other projects in Alaska, New Mexico, and Colorado use radio and telephone backup for physician extenders. The recommended design is based on the Logan Airport system and features direct communication between the patient and the physician via interactive television. Photographs of equipment to be included in the system, details of staffing arrangements, and copies of protocols used by physician extenders in the Farmington project are included.

Bergan Tom, Hirsch Gary
Western Interstate Commission on Higher Education, Boulder, Colo.
A National Model of Supply, Demand, and Distribution.
Summary Rept. Analysis and Planning for Improved Distribution of Nursing Personnel and Services.
40p 1976 Available NTIS HRP-0023104

A 'National Model' has been developed as a tool for policymakers in estimating the impact of changes in actions, programs, and policies on the supply, demand, and distribution of nursing personnel and services. A task force that included representatives of nursing service, nursing education, comprehensive health planning, and the sponsoring agencies provided direction, acted as a sounding board, and served as the principal source of data for many of the model's relationships. All simulations with the model were

initiated with 1972 data, and the model's behavior between 1972 and 1976 was studied to correct any discrepancies. The model's interrelationships fall into four interrelated sectors: nursing education, nursing employment, demand, and demography. Seven major employment settings are considered: hospitals, ambulatory care, long-term care, schools of nursing, public health, and private duty and other. Five levels of educational preparation are included: licensed practical nurse, associate degree, diploma, baccalaureate, and advanced. The model also differentiates among the need, demand, and number of nursing personnel actually employed and includes these factors in the same framework. Following an explanation of simulation and the use of models, a baseline simulation is presented. The model is then applied to four conditions involving changes in the health care delivery system and to four conditions directly related to nursing practice, education, and utilization. Appropriate uses of the model are described and provision for access to the model and for updating based on data available are recommended.

Bergman Rebecca
Tel-Aviv Univ. (Israel). Dept. of Nursing.
Nursing Manpower: Issues and Trends.
Pub. in Jnl. of Nursing Administration p21-25 May 75.

The question is addressed of whether a nursing manpower shortage actually exists, or if this 'shortage' is not really due to poor utilization of available personnel. Two models are presented for manpower studies, a basic model for local manpower study, and a model for a national nursing manpower study. It is noted that both large and small scale manpower planning is essential. There are two primary objectives for undertaking a nursing manpower study: (1) to provide a basis for the preparation and employment of nursing personnel in line with health needs and resources, and (2) to identify methods of improving the utilization of nursing services. Several principles are presented for those conducting a nursing manpower study. The study should be coordinated with health and health manpower planning and be based in the reality of the local situation, giving priority to problems on which people are ready to act. The study should: have short-term and long-term objectives with action following each phase; use scientific methods; use available data from all sources; be subject to regular review and adapted to changing health needs, trends and socioeconomic factors; and involve wide participation of nurses, other professionals and community representatives. Nine steps, comprising the second model, are proposed for a predictive national study of nursing manpower.

Bihldorff J. P, McPhail A, Payne R, Scanlon R
McMaster Univ., Hamilton (Ontario). Medical Centre.
Approach to Patient Classification -- And Some Results.
Pub. in Hospital Administration in Canada v18 n2 p22-25 Feb 76.

Steps in the application of patient classification systems are outlined after a brief review of the literature. Four steps in the implementation of an effective patient classification are identified -- (1) establishing objectives to be pursued in a hospital as they relate to staffing management; (2) adopting a systems approach in consultation with nursing and according to nursing direction; (3) accepting fundamental principles of patient classification and implementing a patient classification system according to these guidelines; and (4) evaluating the functioning of a system and its contribution to the achievement of objectives on an ongoing basis. The development of a patient classification system at the McMaster University Medical Centre in Hamilton, Ontario, Canada is detailed. It is pointed out that a close working relationship among nursing, systems engineering, and other clinical service administrative representatives has been maintained throughout the design and implementation stages of the center's patient classification system. Different values are used to determine the level of care needed on each ward, based on the observation and measurement of actual nursing practices. The benefits of the system are delineated, with emphasis on frequent evaluation of staffing according to the needs of patients.

Boam T. V
A Question of Balance: Tactics and Strategy of Nurse Manpower Planning--1.
Pub. in Nursing Times v73 n1, suppl 1-4, 6 Jan 77.

Boam T. V
A Question of Balance: Tactics and Strategy of Nurse Manpower Planning--2.
Pub. in Nursing Times v73 n2, suppl 5-8, 13 Jan 77.

Boam T. V
A Question of Balance: Tactics and Strategy of Nurse Manpower Planning--3.
Pub. in Nursing Times v73 n3, suppl 9-12, 20 Jan 77.

Brayton James B
Johns Hopkins Univ., Baltimore, Md. Dept. of Pediatrics.
Simulation of Alternate Pediatric Hospital Care Units. Volume III.
276p 1975 Available NTIS HRP-0009703

Volume III of a report on the simulation of pediatric hospital care units contains users manuals for the computer programs involved in the simulation. Instructions for and listings of computer programs developed to perform the care unit loading part of the simulation and ancillary functions are presented. Included are programs for preparing input data required for the care unit loading and the services and staffing parts of the simulation, as described in Volume I. The programs are written primarily in UNIVAC's Fortran V language. The services and staffing program is a modification of a nursing home simulation program, altered to accept daily changes in census of units and schedule of patient demands. Input and analysis procedures are fully documented. Logic flow charts, examples of computer deck setups, and other illustrations are included. Portions of this document are not fully legible.

Butler A. M
Manpower Planning for Quality Nursing Care.
Pub. in New Zealand Nursing Jnl. v69 n3 p26-30 Mar 76.

Cales Alice D
Baptist Hospital, Pensacola, Fla.
Twelve-Hour Schedule Experiment.
Pub. in Supervisor Nurse v7 n6 p71,72,74,76 Jun 76.

The nursery department at the Baptist Hospital in Pensacola, Fla., voted to change from three 8-hour shifts to two 12-hour shifts, working 7 days and then having 7 days off. The new schedule had distinct advantages: no shifting of personnel, no new schedules (new schedules are posted every 6 weeks), no part-time help, and no worry about continuity of care. One nurse on each shift starts a day later than the group, thus helping to achieve continuity. Each shift receives the report from the same one to which they had reported 12 hours earlier. The work week begins on Wednesday and ends the following Tuesday. There are four units: two work from 7:00 a.m. to 7:00 p.m. and two from 7:00 p.m. to 7:00 a.m., alternating each week with the other. Although the first week was rough, the staff were ready to tackle the workload again after a week off. After about 3 months a number of complaints were voiced, and other scheduling possibilities were explored. The nurses were surveyed and a majority voted to return to the 8-hour shift, still retaining every other weekend off. With the 8-hour shift, it is possible to have

only every third weekend off. The whole department met to discuss scheduling problems and voted to retain the 12-hour shift. One complication of such scheduling involves inservice programs, some of which are now taped so that personnel may listen to them at their own convenience. The 12-hour shift is not a panacea but it is working at the Baptist Hospital, and nurses were pleased that the decision was their own. A sample 6-week schedule is provided.

Charles S. T, Gillott M
Equating Ward Staff with Work Loads.
Pub. in Nursing Times v73 n8, suppl 29-32 Feb 77.

Charter Diane
How the Frieson Concept Affects Nurse Staffing.
Pub. in Canadian Hospital p52-54, 56 Sep 70.

A study of the impact of the Friesen hospital design (i.e., the 'no-nursing-station concept') on nurse staffing and organization is reported. Data were collected on walking time, time spent with patients, and staffing requirements in a 524-bed general hospital employing the Friesen concept. These data were compared with similar information relating to conventional hospitals. Both the Friesen and the comparison units used team nursing and conventional charting and recordkeeping practices. Using the comparison data, a hypothetical hospital containing 320 medical-surgical beds was described. It was first configured and staffed according to staffing levels and organizational structure found at the Friesen hospital, and then according to levels and structure found in a conventional hospital. Major findings indicated that: (1) in the hypothetical hospital, the Friesen system design and resultant staffing organization reduced total staff required by 14 percent; (2) through reduction of walking time and elimination of the head nurse level, the Friesen system provided the same quality of patient care with 22 percent fewer direct care staffing hours per patient day than was found in one study, and 17 percent fewer than in another study of nursing staff use in conventional hospitals; (3) in the Friesen units studied, the registered nurses spend 32 percent less time walking and registered nursing assistants 52 percent less time than did their counterparts in a separate study performed in 55 conventional units in eight hospitals; and (4) in the Friesen hospital studied, team leaders spent 108 percent more time in the patient rooms than did the head nurse in conventional units in another study, registered nurses spent 37 percent more time in patient rooms, and assistants spent 20 percent more time in patient rooms. Supporting data and an explanation of the Friesen concept are provided.

Chi Systems, Inc., Ann Arbor, Mich.
Friesen No-Nursing Station Concept: Its Effects on Nurse Staffing.
33p Apr 70 Available NTIS HRP-0012328

The contribution of Friesen design concepts to the improved use of nursing personnel is explored. The study of a Friesen nursing unit was conducted from February through April, 1970, and consisted of four phases: systems analysis and documentation, work sampling data collection, literature search, and staffing methodology development. The site for the study was the Scarborough Centenary Hospital in Toronto, Canada, a 524-bed general acute care hospital. The Friesen nursing unit selected for the study was different from conventional nursing units in terms of physical design, operational systems employed, and the organizational structure of nursing personnel. The major design feature of the Friesen approach is that supplies and medications are made available to nurses in patient rooms so that they are never required to leave the rooms to complete treatment and care. In the Friesen system, nursing stations are replaced by administrative communications centers. Graphical illustrations on the Friesen system are presented, and tabular data are provided to show the effect of Friesen design concepts on locations where nurses perform major activities. In the Scarborough Centenary Hospital, the Friesen system reduced the total required staff by 14 percent. Quality patient care was provided with 22 percent less direct care staffing hours per patient day through reductions in walking time and the elimination of the head nurse level. Team leaders in the hospital spent 108 percent more time in patient rooms than head nurses in conventional nursing units.

Clark E. Louise
Model of Nurse Staffing for Effective Patient Care.
Pub. in Jnl. of Nursing Administration v7 n2 p22-27 Feb 77.

The implementation of an economical and efficient nurse staffing plan is described. Nurses participate in direct patient care and administrative activities, supervision, and training. It is felt that the typical team approach to staffing, which employs personnel at designated skill levels to perform various tasks, is ineffective in terms of the provision of nursing care and in cost. Team nursing in the setting of a 24-hour day and 7 days per week requires at least six team leaders to plan and be accountable for nursing care. The staffing plan recommended here has been tested for 2 years and incorporates an educational program dealing with reorientation and the expansion of nursing concepts. The nursing mission is viewed as encompassing two important aspects -- maintaining the patient's physical well-being at

an optimum level; and maintaining, strengthening, or altering the patient's methods of coping with physiological and psychological alterations. The assignment of total nursing responsibility for quality care to 1 nurse clinician per 20 patients is considered to be an effective way of fulfilling the nursing mission. One registered nurse or licensed practical nurse is employed for every seven patients to implement medical and nursing care plans and coordinate nursing care activities. This staffing plan is illustrated for a 22-bed intermediate care unit, and the benefits are enumerated. Particular attention is given to the increased amount of time spent on direct patient care. A list of references is included.

Cochran Jeannette, Derr Duane
Saint Joseph Hospital, Albuquerque, N. Mex.
Patient Acuity System for Nurse Staffing.
Pub. in Hospital Progress v56 n11 p51-54 Nov 75.

A patient acuity system was designed with the idea of maintaining quality patient care in spite of financial and budgetary constraints. The methodology used to develop staffing standards consisted of three steps: establishing acuity definitions, validating definitions and developing preliminary acuity standards using an operation audit, and validating acuity standards using work standards. The project, which was completed in approximately 1 year, involved 4 phases. The first three phases were accomplished during the first year. Periodic maintenance of the study, the fourth phase, is an ongoing process. These phases and the staffing mechanism are briefly described. Team leaders are responsible for rating the patients assigned to them. The rating is performed several hours prior to shift change; patients to be admitted during the next shift are also rated. The projected staffing requirements specify the number of registered nurses, licensed practical nurses, and nursing assistants preferred. The units are to report their requirements at least 1 hour prior to shift change; the collective results are reviewed by the nursing supervisory staff and adjustments (reassignment, calling in of additional staff, etc.) are made. The management information system extracts from a daily patient acuity report, and generates series of management reports for individual units and for all the units together. It is concluded that the system, which has been used to prepare budget, justify staffing changes due to census changes, and to effect dollar savings, has resulted in a more flexible staffing environment. A table showing acuity definitions for rehabitation is provided.

Coggeshall John H
Belleville Area Coll., Ill.
Management of Retirement Homes and Long-Term Care Facilities.
200p 1973 Available from C.V. Mosby Co., 11830 Westline Industrial Dr., St. Louis, MO 63141.

The administration and management of long-term care facilities and retirement homes are discussed in a book designed to help those entering this field. A chapter on organizational structures and the responsibilities of ownership describes three basic kinds of ownership: ownership vested in a fraternal group, governmental ownership, and proprietary ownership. The role of the administrator in management is discussed in terms of planning, organizing, directing, controlling, and staffing. An investigation of the organization and administration of the facility centers on the departments and work efforts and the administrative services such as policies and procedures. Contracting for services, housekeeping, mechanical and grounds maintenance, building maintenance, laundry, food, fire safety, and building security are discussed in a section on residential services. The topics considered in the chapter on health services include: the health office in the retirement residence; the nursing department in the nursing home or home for the aged; pharmacy services; the medical advisory committee and medical director; medical records; and auxiliary health needs. An analysis of the necessity of social services is made, and the relationship of the retirement home to the community is explored. The rules and regulations of a retirement community and the bylaws of a residents' association are appended. References are included and the text is indexed.

Crompton H. Margaret, Mitchell H, Cameron J. McL
Aberdeen Formula.
Pub. in Nursing Times v72 n34 p121-124 26 Aug 76.

The Aberdeen formula, a method of determining nursing staff needs, is used widely in Scotland. Two studies were conducted in Scotland during 1967 and 1969 to obtain information on how nursing time was spent, the defined standard of basic nursing care for helpless patients, and nursing duties appropriate to various grades of nursing staff. A formula was developed, based on this information, to calculate daily staffing needs of hospital wards in nonmental hospitals. The formula encompasses the following factors: average weekly nursing workload in hours, average number of patients in ward, patient dependency factor for ward specialty, time in hours per week required to maintain the standard of basic nursing care for a totally helpless patient, time required for technical nursing of the ward specialty expressed as a percentage of the time spent on

basic nursing, time per patient per week for administrative duties, time per patient per week for domestic work, and time per patient per week for miscellaneous duties. Factors involved in the classification of patients are delineated in tabular form. Tabular information is also given with regard to nursing care for helpless patients and grades and duties of nursing staff.

CSF Ltd., Ann Arbor, Mich.
Annotated Bibliography of Nursing Manpower Models.
42p Dec 76 Available NTIS HRP-0023568

This report is an update of the 1974 Vector Research Inc. (VRI) inventory of models directly or peripherally related to health manpower supply and requirements problems. It covers only models of the utilization of health services, demand for nursing personnel, and supply of nursing personnel. This update of the inventory includes a review of the literature since the ending date of VRI's review (1973) through June, 1975. The VRI report format was used in order to facilitate the inventory process and to provide continuity for anyone familiar with the original study. The model identification code includes: model identification, including descriptive title, developer's name, and references; general descriptors, including development status, purpose and sponsor, scope and subject, abstract, major outputs, and assumptions/constraints/hypotheses; and technical descriptors, including model type, model characteristics, data utilized, input variables, output variables, verification/applicability/reliability, and computer characteristics. The descriptive titles of the models included in this update are: nonmonetary factors in the demand for medical services; a model of health status in New Mexico; probabilistic models used to determine hospital service area; relationship of nurses' supply to salary changes; the short-run supply of nurses' time; substitution between registered nurses and licensed practical nurses by hospitals; monopsony power and the shortage of nurses; interactions among variables affecting hospital utilization; the impact of the extended-care facility benefit on hospital use and reimbursements under Medicare; and short-run supply responses of professional nurses.

Curtis C
A System of Measurement of Patient Dependency and Nurse Utilization.
Pub. in Australian Nurses Jnl. v6 n10 p36-38,42 Apr 77.

Daly Dennis, Rick Robert
Community Systems Foundation, Minneapolis, Minn. Minneapolis - St. Paul Regional Office.
Nursing Quality Audit Program.
50p 1972 Available Community Systems Foundation, 1130 Hill St., Ann Arbor, MI 48104.

A nursing quality audit based on the application of statistical quality control methods is reported. The objectives of the audit were to provide a quantitative index of the level of care and services provided on hospital medical - surgical units, to provide feedback through an analysis of deficiencies in order to permit necessary corrective action, to develop a system for implementing quality control measures on a continuous basis, and to establish guidelines for nursing staffing. The quality control study consisted of six major steps: (1) selection of study units; (2) review and revision of standard quality indicators; (3) calculation of sample size and schedule design; (4) selection and orientation of observers; (5) observation and rating; and (6) quality committee review and evaluation of checklists. Five categories of nursing quality indicators (patient welfare, patient comfort, patient room, patient chart, and nursing unit) were analyzed. Each indicator category was assigned a weight which represented a measure of its significance in relation to quality care. An overall rating for medical - surgical units of 88.4 percent (out of a possible 100 percent) was observed. An analysis of deficiencies was performed to identify those indicators answered negatively. Appendixes contain the nursing quality control observation schedule, the quality control index during March and April, 1972, quality control check sheets, the nursing quality control observation schedule used in a second audit, and a sample quality control index.

Dean Charles R
Children's Bureau, Washington, D.C.
Staffing Patterns and Clinic Efficiency.
Pub. in Family Planning Perspectives v2 n4 p35-40 Oct 70.

The use of a patient / staff index to evaluate the efficiency of a family planning clinic is discussed. Ninety-seven clinic sessions were observed in 29 different family planning clinics around the country. The clinics varied substantially in the number of patients seen per hour. On the average, there were about nine-tenths as many staff people as patients per clinic session hour. Client retention rates within the sampled clinics varied greatly, ranging from 5.7 months to 21.8 months. Although the ultimate measure of a family planning clinic is the number of pregnancies prevented, the most efficient measure is the number of patients seen per clinic hour. A clinic that provides service to a large

number of clients is more productive. An estimating equation for the production function of a family planning clinic permits the calculation of alternative combinations of nurses, physicians, and nonprofessionals. Different types of patient visits making up the case load are weighed according to visit times for three types of visits. If nurses and nonprofessionals are used in greater proportion, the physicians' productivity and efficiency will increase. This increased productivity would weigh positively against the relative wages of nurses and nonprofessionals.

DeMarco James P, Snavely Shirley A
Children's Hospital at Akron, Ohio.
Nurse Staffing with a Data Processing System.
Pub. in American Jnl. of Nursing p122-125 Oct 63.

The development and implementation of a computer-assisted nurse staffing system at Children's Hospital at Akron, Ohio are described. The planning process began with a careful definition of direct patient care. The approach taken was to delineate those things which direct patient care did not include (e.g., acquiring information, recording, transcribing or copying, referencing, exchanging information, transmitting, maintaining records, conducting classes). It was found that about 40 percent of nurses' time is spent in performing activities other than direct patient care. Two factors were considered in establishing a base on which to build a staffing pattern by electronic data processing. One was the condition of each patient; the other was the capability of each member of the nursing staff. A scale of one through nine was developed to rate patients each day in terms of degree of difficulty of nursing care. Based on a nursing profile developed from an analysis of the nursing staff, a rating system for the staff was created in which a 9 indicates a head nurse, 8 an assistant head nurse and staff nurse, and 7 to 0 indicate staff members. Once the degree of difficulty of nursing care has been established, the patient rating is converted to an element of time. The computer is fed weekly staffing schedules, and comparisons are made between the staff available and patient requirements. The computer analyzes any discrepancies and prints out scheduled assignments for each station. The computer is programmed to produce a distribution of personnel that will yield a balanced staff when all stations are compared. The computer requires 10 minutes to calculate, print out, readjust, and suggest assignments for each eight-hour shift in the 253-bed hospital. Sample computer printouts accompany the text.

Elliot Jo Eleanor, Kearns Jeanne, Eds.
Western Interstate Commission on Higher Education, Boulder, Colo.
Analysis and Planning for Improved Distribution of Nursing Personnel and Services, Final Report.
1978 Available NTIS HRP-0900556

A final report of the activities carried out during the 30-month contract period. Reports on the State Model, Field Development and Pilot Testing of the State Model, National Model, Taxonomy Committee, Long Range Data Collection and Use, Regional Centers, Training, National Conferences, New and Emerging Roles, and the Panel of Expert Consultants. Includes a listing of all participants in the project.

Ellis Barbara
The All-RN Staff: Why Not?
Pub. in Hospitals v52 n20 p107-108, 110, 112 1978.

Eusanio Patricia L
Effective Scheduling -- The Foundation for Quality Care.
Pub. in Jnl. of Nursing Administration v8 n1 p12-17 Jan 78.

Directors of nursing are responsible for developing and executing effective staffing programs. Effective staffing is the result of deliberate, careful selection of specific individuals and a prediction of their effect on patients and patient care. Cyclical scheduling is a technique for assigning work days and time off in a pattern that repeats itself cyclically, while paying attention to the need for proper numbers and mixes of personnel, continuity of patient care, and work groups. The premises and policies concerning time scheduling upon which cyclical scheduling is based include: schedules should represent a balance between the needs of the employees and the employer (patient care); schedules should distribute the 'good' and 'bad' days off fairly among all employees; all employees should adhere to the established rotation, with rare exceptions; advance posting of time schedules allows employees to plan their personal lives, reducing absenteeism and requests for changes; time schedules should not be a mystery nor a tool of control or discipline; there should be a mechanism for emergency changes to accommodate both employees and employer; schedules must conform to all labor laws and hospital and departmental policies; schedules should be established to provide correct numbers and mix of personnel, allowing the continuity essential to quality care; and schedules should be consistent, enabling work groups to develop teamwork. Heavy emphasis should be placed on the establishment and implementation of formal, written policies. Particular issues which should be addressed in such policies are

identified. Sample master time schedules and individual time schedules are included.

Fine Ruth Barney
Washington Univ., Seattle. School of Nursing.
Decentralization and Staffing.
Pub. in Nursing Administration Quarterly v1 n4 p59-67 1977.

The idea of matrix organization as decentralization of authority and responsibility, which originated in the airplane manufacturing industry, grew from many of the same conditions and needs faced by nursing directors who operate nursing departments in complex institutions. Cooperation between many external agencies has increased the internal complexity of the general hospital. Advanced or intensive technology in hospitals has been a major cause of change adding to the turbulent environment in which nursing is practiced. Different technologies require different relationship patterns. The high degree of interdependence among specialized staff creates the need for coordination at the technical level of the nursing unit. The traditional expectation that the supervisor will coordinate all activities for the unit will not work, since much of the coordination needs to be done in on-the-spot discussion. Peer relationships develop from communication patterns which are necessary in highly interdependent tasks. The diffusion of power in the hierarchical structure which results is accommodated by the matrix organization, which legitimizes the lateral communication network by recognizing the authority of expertise at the staff nurse level. Decentralization of control and decisionmaking requires more openness than a strictly hierarchical structure. In such an open organization, conflict must be brought out and handled by negotiation. Most staff nurses will require group development training to equip them to function in an environment where negotiation of roles is necessary and problem-solving work groups are the medium for decisionmaking.

Finlayson Hal
Kingston General Hospital (Ontario).
NUMBRS Approach to Nursing Management.
Pub. in Dimensions in Health Service v53 n5 p39-44 May 76.

An innovative management and reporting system for nurses at the Kingston General Hospital in Ontario, Canada, is detailed. Major components of the system include scheduling, patient classification (workload determination and variable staffing), quality assurance, and budgeting for nursing service. The computerized system, implemented in August 1974, is designed to be more flexible and offer more features than manual systems. Ten aspects of flexibility are built

into the system: (1) the hospital can specify 4 to 6 weeks of scheduling; (2) the system can generate cyclical or flexible schedules simultaneously for different units; (3) fixed patterns and nurses on permanent shifts can be integrated with flexible schelules; (4) nurses can specify days off, including weekends; (5) nurses can specify shift preferences; (6) nurses can specify tradeoff or work stretch versus split days; (7) the system software can schedule part-time staff; (8) the hospital can specify variable coverage by shift and day of the week; (9) the hospital can specify variable weekend off ratios; and (10) the hospital can specify, on a gross basis, the weighting on nursing coverage relative to individual patterns. The system is based on the Medicus approach to patient classification and workload determination, as developed by the Medicus Corporation in Chicago, Ill. It incorporates a patient classification sheet, a patient care index, patient care monitoring, personnel budgeting, and management reporting.

Freund Louis E, Mauksch Ingeborg G
Missouri Univ., Columbia. Dept. of Industrial Engineering.
Optimal Nursing Assignments Based on Difficulty.
313p 30 Jun 75 Available NTIS PB-254 080/5

The purpose of the grant was to develop a technique for optimally assigning nursing personnel to patient care responsibilities. A quasi-experimental research design was used. A mathematical model was developed that was based on a concept of difficulty associated with elements of patient care. The model was implemented and analyzed in ten medical/surgical nursing units in six hospitals. Data collection consisted of work sampling for model validation, use of a patient classification methodology, and quality of care evaluation. Some of the findings were: (1) The model-generated staffing out-performed hospital personnel on study units by providing assignments which were better balanced and evened out relative difficulty ratings of each assignment; (2) it can be used to gain information on the effect of different staffing policies, make decisions about long range unit staffing, and train head nurses and team leaders in selecting efficient staffing patterns; and (3) results indicate that case assignments require 27% more capacity than functional assignments. (NTIS)

Gabbert Charles C, Kuykendall LuVerne, Swanke Ferne, Simpkins Don
CSF, Ltd., Minneapolis, Minn.
Nursing Utilization Management Information System.
21p 9 Jun 75 Available from CSF, Ltd., 3001 South State Street, Suite 707, Ann Arbor, MI 48104.

A management information system designed to predict staff needs, to determine trends in patients' nursing care needs, and to monitor budgetary compliance in the nursing division at Fairview Hospital, Minneapolis, Minn., is described. The system consists of the following biweekly reports: average number of patients per category; total earned nursing hours; nursing unit hours worked; nursing service report of performance by skill level; nursing service report of performance; graphic report of nursing performance; report of budget staff utilization; and report of nursing hours per patient day. In addition, the system provides cumulative reports on the average number of patients per category and on utilization and performance. The uses and content of each report are described briefly. Each description is accompanied by an illustration of the format of the report. The system developed to predict nursing care requirements for nursing units prior to the beginning of each shift is described. The system, which is based on data obtained through the management information system, provides for the objective assignment of nursing float personnel and the exchange of personnel between units. Implementation of the retrospective and predictive components of the management information system is described, as is the data-processing equipment used by the system.

Gaul Kenneth E, Markowitz Walter L
Brentwood Health Center, N.Y.
Suffolk County Comprehensive Ambulatory Health Center Model.
76p May 75 Available NTIS HRP-0012147

A model for the organization and delivery of ambulatory health services in county health centers is presented. Developed by the Suffolk County (New York) Department of Health Services, the model is structured by program function. Each service is modular in design and can be added or deleted according to the demonstrated needs of community residents served by a particular health center. The sevices include direct patient care services (primary care services, specialty services, mental health services, and methadone maintenance); ancillary patient care services (radiology services, laboratory services, pharmacy); supportive health care services (public health nursing, home health services, social service, nutrition services, communicable disease control, immunization investigation, public health education); and supportive nonpatient care services (administration, intake / reception / financial, medical records, mental health clerical / reception / financial). Each service module includes a description of the program functions and specifications of staffing and space requirements. Floor plans are included for several of the modules. The Department of Health Services recommends that, when possible, health centers contract with community

hospitals for backup services such as admission of patients when indicated and sophisticated radiological procedures. It is also noted that a minimum of 10,000 primary care patient visits is required to operate a health center efficiently and economically.

Giovannetti Phyllis, McKague Laverne
Saskatchewan Univ., Saskatoon. Hospital Systems Study Group.
Patient Classification System and Staffing By Workload Index: A Working Manual.
32p Apr 73 Available from Hospital Systems Study Group, 3337 8th Street East at Acadia Drive, Saskatoon, Saskatchewan, Canada 57H4K1.

The concepts of patient classification and staffing by workload index are described and steps in implementing these concepts are outlined in a manual developed during a 5-year nursing research project directed toward problems in the delivery of nursing care. The patient classification system entails the categorization of patients according to four levels of nursing care requirements ranging from minimal to intensive. The levels center on the patient and are not limited to the technical aspects of care. The concept is based on the isolation of several critical indicators or components of physical and psychosocial needs which, when identified, permit assignment of the patient to an appropriate category of care. The workload index relates to the quantification of the levels of care, measuring the direct nursing care component of each of the four categories of care. Staffing by workload index incorporates the direct care index associated with each category along with the nursing staff time available to provide direct care. A simple trial and error method is included for determining the workload index for any hospital without resorting to activity studies. Full documentation of both concepts and their implementation is provided, as are related forms.

Giovannetti Phyllis
Public Health Service, Hyattsville, Md. Div. of Nursing.
Patient Classification Systems in Nursing: A Description and Analysis.
113p Jul 78 Available from NTIS HRP-0500501

Patient classification systems can play a significant role in enhancing effective and efficient utilization of nursing personnel resources. This monograph discusses these important systems in terms of their development and describes them as planning tools for the deployment of nursing resources. The introductory material defines key terms and reviews the elements of a staffing program, the concepts and designs of patient classification, and classification theory.

It is noted that the term 'patient classification system' encompasses both the process of identification and the quantification (typically based on nursing time involved in direct patient care) of the categories of care into some measure of the nursing effort required. The discussion then turns to the uses of a patient classification system; historical developments (including such concerns as the lack of attention on the part of classification systems to the issue of quality of care); examples of implemented systems in various specialized settings in addition to their major use in short term general hospitals; major issues surrounding selection and development, such as critical indicators and the quantification techniques; and limitations of patient classification. The discussion closes with a brief look at future development, including research needs. An extensive bibliography accompanies the text.

Hall Dorothy C
World Health Organization, Copenhagen (Denmark). Regional Office for Europe.
Nursing Personnel Systems.
Pub. in Jnl. of Advanced Nursing v1 n1 p79-87 Jan 76.

A systems approach is used to examine the role of nursing vis-a-vis other professions involved in the delivery of health care. An 'identity crisis' in the nursing profession is recognized, and the development of a planned nursing personnel system may be the appropriate response to this crisis. Such a systematic approach would be in contrast to the tradition of expediency, which has resulted in orientation of the nursing profession to hospitals and illness rather than to patients. Several health personnel systems are described and illustrated schematically. Among these are the horizontal health personnel system, in which nurses and other health professionals share a relatively equal position on a lateral plane; a medical system, in which nursing is one of a series of disciplines arranged vertically, with physicians occupying the top rung of the ladder; and a staircase system, in which somewhat greater interdisciplinary mobility is added to the medical system. The dilemma of cure versus care implied by these personnel systems is discussed. The role of nursing in care is described as major, although it is conceded that the nursing profession has not contributed to a demonstration of the differences or interrelationships between cure and care. A rational, two-level or three-level nursing personnel system is suggested as a tool for promoting more effective nursing care and nursing leadership. Such a system, proposed by a World Health Organization committee, is illustrated.

Hanson Robert L
Virginia Mason Hospital, Seattle, Wash.
Predicting Nurse Staffing Needs to Meet Patient Needs.
Pub. in Washington State Jnl. of Nursing v48 p7-11
Summmer/Fall 1976.

A patient classification system was developed at Virginia Mason Hospital in Seattle, Washington, in order to provide a quantitative means of measuring and reporting nurse staffing needs. An initial nursing activity study identified 12 direct care activities, out of a possible 72, that had high correlations with the total nursing direct care time when patients were divided into four groups. The results of this study were then used to develop a Patient Classification and Nursing Utilization system, which was implemented on all medical-surgical nursing units at the hospital. After two years of practical experience with the system, the tool was retested at Virginia Mason Hospital and tested in two additional institutions. Data collection for each patient in the study included demographic data, classification level according to the tool, and the number of minutes of direct nursing care per shift, documented for 24-hours on each patient. In all cases and in all three institutions, the differences between mean direct nursing care times for adjacent classification levels were found to be significant. In addition, the similarity between institutions in the mean direct care times by classification level was striking. The Virginia Mason Hospital patient classification tool was found to be valid on the basis of its ability to provide predictive discrimination between groups of patients in terms of the amount of direct nursing care they receive. The tool is useful in making daily staffing decisions, justifying staffing and budget proposals, adjusting staffing rotations, evaluating supervisors, and providing partial justification of the hospital budget to overseeing organizations.

Harman Ronald J
Misericordia Hospital, Edmonton, Alberta (Canada).
Nursing Services Information System.
Pub. in Jnl. of Nursing Administration v7 n3 p14-20 Mar 77.

Nursing Service Information System (NSIS) is designed to measure the quality of nursing care as well as feedback data on patient-generated workload and staffing patterns. The system grew out of suggestions offered in a paper by Pieter Haussmann and consists of gathering and reporting patient census, workload indicies, staffing complements, staffing indicies, and the quality of nursing care provided by each unit. A series of charts, designed for NSIS and shown in the article, is completed each week to analyze how much time is being spent with patients (divided into categories depending on how much direct care they need), what kind of nurse is

providing the service and how well the service is performed. A factor weighting system was also designed in order to effectively quantify the audit results. NSIS prepares reports weekly for each unit as well as comparison data between units. NSIS discovered that there was a strong positive correlation between carefully compiled care records by nurses and quality care. The continuing audit process also helped nursing units see their weaknesses and weekly improvements. The article also discusses the similarities and differences between the NSIS approach and that suggested by Pieter Haussmann.

Illinois State Dept. of Public Health, Springfield.
The Nursing Home Simulation Model Users Manual - FORTRAN IV Version.
296p Jun 75 Available NTIS PB-248 726/2

Two parallel concerns, adequacy of staffing and cost, are the basis for the development of the Nursing Home Simulation Model. The model was developed to help health planners, facility administrators, and regulatory agencies evaluate the effectiveness and efficiency of alternatively configured long-term care facilities providing different types of care to a variety of patient population. It can also evaluate the cost of effectiveness of meeting nursing care requirements of residents under alternative staffing configurations and systems for the delivery of care. The report describes the Nursing Home Simulation Model and the experiments that validate its characterization and evaluates its usefulness as a planning and regulatory tool for long-term care facilities. (NTIS)

Illinois State Dept. of Public Health, Springfield.
The Nursing Home Simulation Model Users Manual - Simscript 1.5 Version.
220p Feb 75 Available NTIS PB-248 862/5

Two parallel concerns, adequacy of staffing and cost, are the basis for the development of the Nursing Home Simulation Model. The model was developed to help health planners, facility administrators, and regulatory agencies evaluate the effectiveness and efficiency of alternatively configured long-term care facilities providing different types of care to a variety of patient population. It can also evaluate the cost of effectiveness of meeting nursing care requirements of residents under alternative staffing configurations and systems for the delivery of care. The report describes the Nursing Home Simulation Model and the experiments that validate its characterization and evaluates its usefulness as a planning and regulatory tool for long-term care facilities. Portions of this document are not fully legible. (NTIS)

Indiana State Dept. of Mental Health, Indianapolis.
SPAN. Staffing for Patient's Actual Needs.
90p 1970 Available NTIS HRP-0001570

The SPAN (Staffing for Patient's Actual Needs) system of evaluating staffing requirements for hospitals is discussed. This computerized system applies methods used in industrial engineering to determine the number of staff required to meet needs of patients. The system is used in State psychiatric facilities in Indiana. The initial phases of the project determined the needs for nursing personnel. In the future the system will be used to analyze other areas of patient need, including recreation, activity therapy, and social service. The system provides management with necessary data for personnel management and for patient population analysis. It also identifies trends important in budgeting for cost analysis. A semi-annual inventory is made of all patients, with classification according to characteristics which determine the care they require. This profile, along with a manpower inventory, is fed into a computer which analyzes the number of minutes of care required to meet each patient's need and provides summaries of total staffing needs. The report presents results of the study of nursing staff patterns and requirements for 1970, 1971, and 1972 at 12 State psychiatric hospitals. An analysis of the progressive SPAN surveys yields a picture of staffing patterns in the various hospitals in the State. Results are presented in tabular form without specific conclusions. Portions of this document are not fully legible.

Johnson Jo, Ganti Annajee R, Nagy Emil J
Creighton Memorial Saint Joseph Hospital, Omaha, Nebr.
Objective Patient Classification System in Psychiatric Nursing.
Pub. in Canada's Mental Health v24 n2 p23-26 Jun 76.

A system for classifying patients in the psychiatric division of a hospital is described. The purpose of the classification is to serve as an aid in determining nurse staffing needs and improving scheduling practices. The system also is intended to help nurses in developing comprehensive patient care plans, to be used for review purposes by supervisors, and to serve as a basis for considering the feasibility of developing a revised patient charge system. The adaptation of the system from one developed by Community Management Services, Inc. (CMS), and implemented in Canadian and American hospitals is described. The CMS classification forms for community therapy, acute intensive care, adolescent service, and children service were revised to meet the needs of the psychiatric unit. Using the appropriate form, nurses follow written guidelines in classifying patients according to their physical needs,

safety and precautions, tests and treatments, behavior, and family interactions. Numerical scores for indicators in each of these areas are converted to letter categories, which indicate the level of care required by the patient. Difficulties in implementing the patient classification system are noted, and the benefits and limitations of the system are discussed. A table showing the numbers of patients (by service) classified at each level of care during 1973 and 1974 is included, as is an illustration of one of the classification forms.

Kaplan Robert S
Carnegie - Mellon Univ., Pittsburgh, Pa. Graduate School of Industrial Administration.
Analysis and Control for Nurse Staffing.
Pub. in Health Services Research v10 n3 p278-296 Fall 1975.

An information and reporting system based on a regression analysis of nurse staffing data was developed at a 575-bed university teaching hospital. Aggregate statistics on the nursing staff of the hospital and on the number of patient days were obtained from a summary of the distribution of nursing hours in a monthly hospital report of direct care by patient unit for May 1971. These data were used to estimate the relationship between nursing hours and patient days for individual and aggregated patient units. Fixed and variable components of nursing hours were estimated by multiple regression techniques as a function of patient days. Variations in nursing hours were examined for 20 patient units. In order to explore the effect of aggregation, three sets of selected homogeneous patient units were observed: general medical and surgical, medical teaching, and orthopedic units. Regression models were tested using data generated between July 1971 and January 1972. Aggregate forecasts and forecasts of licensed practical nurse and student hours were made. It was found that the information and reporting system was useful to hospital administrators in evaluating the efficiency of scheduling procedures employed by nursing supervisors to meet varying patient loads.

Kirtane Mohan
Saint Mary's Hospital, Milwaukee, Wis.
Simplified Staffing Study Methodology for Nursing.
14p 1976 Available NTIS HRP-0018928

Management engineering groups have done several staffing studies of nursing service which proved meticulous in result but very expensive. In order to cut cost but maintain accuracy, a simplified staffing study methodology is presented, aimed especially for use in smaller hospitals. Carried out with the active participation of the nurses, the

management engineer's role is held to a minimum. Based on three physical needs -- 1) ambulation, 2) feeding, and 3) bathing -- patients were classified into three types: self care in all three needs; assistance in one need, self care in two; and assistance in two or more needs. The nurses, divided into registered nurse (RN), licensed practical nurse (LPN) and Aide, note on a chart kept in each patient's room the amount of time spent on any given activity with that patient. The results, presented as a ratio of direct to indirect care, are used to reassign staff time to the patients who need the most care and to peak hours in the morning. The results are also used to plan budgets and future staffing needs. The nurses' data sheet and other tabular material about the staffing study methodology and result are provided.

Kneedler Julie
Standard: What Is It and How to Use It.
Pub. in Association of Operating Room Nurses Jnl v23 n4 p551-552, 554 Mar 76.

In response to pressure from professional peers, government regulations, and the consumers' awareness of their right to quality care, operating room nurses have developed evaluation tools for auditing patient care, guidelines for peer review, and standards of practice. Specific facilities must base their standards on consensus, experts, or scientific investigation. The model standard of practice for operating room nurses is the 'Standards of Nursing Practice: Operating Room' published by the Association of Operating Room Nurses and the American Nurses' Association. Examples are presented of how this model can be used to write standards for staffing, product evaluation, or staff development to fit a specific setting. The goal of these standards is to provide the best possible care to each patient who experiences surgery. All operating room nurses should strive to attain the ideal standard, even though, as an ideal, it will be impossible for all operating rooms to meet it. Standards should be recognized as tools -- descriptive statements that reflect operating room practice -- and established to provide a means for determining the quality of patient care.

Lauer Esther Schaefer
Analyzing and Grouping Tasks to Improve Nursing Personnel.
Dissertation, Ed.D., Columbia University Teachers College.
214p.
Dissertation Abstracts v39/01-B p164 1977.

Lee J. M
Nurse Bank Scheme.
Pub. in Nursing Times v73 n49 p1926-1927 8 Dec 77.

Levine Eugene
Public Health Service, Bethesda, Md. Div. of Nursing.
Research on Nurse Staffing in Hospitals. Report of the Conference.
198p May 72 Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, $2.35.

Proceedings of the Conference on Research on Nurse Staffing in Hospitals, sponsored by the Division of Nursing, Public Health Service, DHEW, and held in Fredericksburg, Virginia, May 23 through 25, 1972, are reported in a companion volume to a comprehensive critique of nurse staffing methodology published by the Division in January 1973. The conference brought together 45 persons from a variety of disciplines, all with experience in nurse staffing research. An opening presentation provides an overview of nurse staffing research, and ten papers discuss variables considered significant in influencing the quantitative and qualitative demand for nurse staffing. These variables include: patients' requirements for nursing services; architectural design of the hospital; administrative and cost factors; and social - psychological factors. In addition, papers are presented on evaluation of the quality of nursing care and on the impact of computerized information systems on staffing. Transcriptions of discussions following each presentation are provided. The report closes with a summary and synthesis of the conference proceedings, and comments on future direction for nurse staffing studies. Summaries of conference task force recommendations concerning future directions for research on nurse staffing in hospitals are appended.

Liebman Judith S, Young John P, Bellmore Mandell
Illinois Univ., Urbana. Dept. of Civil Engineering.
Allocation of Nursing Personnel in an Extended Care Facility.
Pub. in Health Services Research v7 n3 p209-220 Fall 72.

A model for the assignment of direct care tasks to bedside nursing personnel is described. Using an ordinal scale of perceived effectiveness, the model generates daily task assignments indistinguishable from or superior to those used by nursing team leaders. A modification of the model has potential use in long-range planning of personnel needs, allowing comparison of alternative staffing patterns by their relative effectiveness profiles and facilitating cost / effectiveness comparisons. Twenty registered nurses, licensed practical nurses, and nursing aids in an extended

care unit of a Baltimore rehabilitation facility provided the basis for the allocation model through a Q - sort procedure designed to measure these nurses' concept of effective personnel utilization. Computer-generated task assignments, based on these concepts, were validated for acceptability in a test in which the nurses compared 18 pairs of alternative personnel assignments, some generated by the computer, and others by the nursing team leader. In six comparisons, the nurses showed no significant preference between the computer plan and the team leader's plan; among ten pairs in which a preference was established, the nurses preferred the computer-generated plan to the team leader's plan nine times. Modification of the model for evaluating alternative staffing configurations is demonstrated, showing the model's ability to generate 'team effectiveness' profiles which allow comparison of the dollar cost and perceived personnel effectiveness of alternative staff configurations when frequencies of direct-care procedures on the unit are known. A bibliography is included.

Lillesand Kay, Mathews Laura L
Saint Nicholas Hospital, Sheboygan, Wis.
Staffing Function and Management Techniques.
Pub. in Nursing Administration v1 n4 p27-30 Summer 77.

A survey of a small number of nursing service administrators, conducted in 1974, indicated that there was a universal lack of use of established management techniques to solve staffing problems. The basic management techniques of planning, organizing, implementing, and evaluating are essential if work is to be accomplished and goals are to be reached. A carefully drafted outline which tracks the management process can be very beneficial in mitigating the problems associated with the staffing function. An outline integrating the management process to the recruitment factor in nurse staffing is presented. The following issues are outlined under the planning function for recruitment: develop the philosophy, purpose, and objectives of the recruitment programs; develop a recruitment committee; forecast both short-term and long-term staffing needs; determine how each objective will be accomplished; determine when each objective will be accomplished; and establish a budget for the recruitment program. Steps are outlined for each of the other three management functions for the recruitment factor in staffing. This outline function must be repeated for each of the other factors considered to be significant to the staffing function: hospital and nursing service philosophies and goals; hospital and personnel policies; determination of personnel requirements; administrative support; incentives and job satisfaction; use of part-time and float personnel; and external forces. The process of effective management is cyclical in nature; as the areas of change are defined,

planning must be started again.

Lindsay Wardell, Dewitt Brent
National Center for Health Services Research, Pockville, Md.
The Nursing Home Simulation Model User's Manual - FORTRAN IV Version (Software Tape).
1 reel mag tape 1976 Available NTIS PB-249 491/2

Two parallel concerns, adequacy of staffing and cost, are the basis for the development of the Nursing Home Simulation Model. The model was developed to help health planners, facility administrators, and regulatory agencies evaluate the effectiveness and efficiency of alternatively configured long-term care facilities providing different types of care to a variety of patient population. It can also evaluate the cost of effectiveness of meeting nursing care requirements of residents under alternative staffing configurations and systems for the delivery of care. The report describes the Nursing Home Simulation Model and the experiments that validate its characterization and evaluates its usefulness as a planning and regulatory tool for long-term care facilities. (NTIS)

Lum Jean, Leonhard Gregory
Western Interstate Commission on Higher Education, Boulder, Colo.
Panel of Expert Consultants: Final Report. Analysis and Planning for Improved Distribution of Nursing Personnel and Services.
1978 Available NTIS HRP-0900555

This manual facilitates the generation of a range of resources projections for nursing personnel based on the assumptions worksheets, mathematical equations and procedures described in 'Nursing Resources and Requirements-- A Guide for State-Level Planning: Analysis and Planning for Improved Distribution of Nursing Personnel and Services.' The Manual is a technical document which provides the necessary information and instructions for entering the resources assumptions into the software to produce sets of projections. This publication is intended for persons with some knowledge of computing systems.

Maierrot C, Wolfe H. B
Cyclical Scheduling and Allocation of Nursing Staff.
Pub. in Socio-Economic Planning Sciences v7 n5 p471-487 1973.

McCartney Richard A, McKee Barbara, Cady Lee D
Hollywood Presbyterian Hospital, Los Angeles, Calif.
Nurse Staffing Systems.
Pub. in Hospitals, Jnl. of the American Hospital Association v44 p102-105 16 Nov 70.

The development of systems by hospitals to project nursing manpower needs for patients with varying degrees of illness is examined. It is pointed out that nurse staffing systems should incorporate management controls in addition to considering the number and kinds of patients in a hospital. The staffing system developed at the Hollywood Presbyterian Hospital in Los Angeles, Calif., is described. The objective of the system was to improve the cost-effectiveness of hospital services through performance standards and staffing improvements. Two concepts were essential in the design of the system: (1) the total amount of nursing care required over a specified period, according to the hospital's average patient load, can be determined adequately by industrial engineering methods; and (2) required nursing care standards can be used on a daily basis for the allocation of staff hours, allowing for any needed variations in patient care time. The role of the head nurse in the hospital's staffing system is explored. Four patient care categories are identified: patient requiring minimal nursing care, patient requiring a moderate amount of nursing care, patient requiring considerable direct care, and patient requiring intensive nursing care. The development of performance standards for the staffing system is reviewed. In the system, staffing formulas and tables are established in relation to total nursing time required per patient day (4.5 hours). This time is prorated by shift. The formula for determining the number of nursing staff hours required for each of the four patient categories is appended.

McNally James K
Lybrand, Ross Bros. and Montgomery, Philadelphia, Pa.
Management Consulting Div.
Flexible Staffing -- The Key to Better Utilization of Nursing Personnel.
Pub. in Hospital Financial Management v24 p3-13,30 Feb 70.

A method for measuring and evaluating utilization of hospital nursing personnel and for developing a flexible approach to staffing is described. A preliminary survey of personnel utilization patterns on each unit results in a graphic display showing the number of hours of nursing care per patient day for each unit over a 1-month period. The graphs can be used to compare units to each other and to an overall hospital average thereby discovering discrepancies in staffing patterns. The next phase in improving personnel utilization is the development of a patient classification.

Guidelines established for a patient classification on a medical unit are presented. Techniques of observing and measuring nursing personnel activities are then described. Once observations are completed, time data are assimilated into a workable format (recap sheets) for the development of activity time allowances. Each activity for which a recap sheet is prepared and a time allowance developed is listed by shift and by function on a staffing formula calculation form, which is then used to arrive at staffing requirements. The end result of the undertaking is that, by developing time allowances based on actual observation, hours of nursing care can be scheduled to meet the needs of the patient population. Copies of all forms and examples of calculations are included.

Meyer Diane
Western North Carolina Health Systems Agency, Morgantown.
Work Load Management System Insures Stable Nurse-Patient Ratio.
Pub. in Hospitals, Jnl. of the American Hospital Association v52 n5 p81-85 Mar 78.

The concept of adjusting work load to staffing is described in a work load management system that ensures a stable nurse to patient ratio. Patient care units are estimated for all incoming admissions, and patients are assigned to the units that have the lowest patient care unit count. The patient care units are calculated on the basis of need for physical care in areas of diet, toilet-output, vital signs and measurement, cleanliness, turning and assisted activities, medications and fluids, and suctioning and respiratory aids. Indirect care, such as administrative activities, is not assessed individually, but is factored into the conversion table for relating patient care needs to nursing staff availability. The conversion table also factors in all the time standards, such as patient teaching and a delay and fatigue factor. With these accurate current assessments of care requirements by individual patients, as well as data on available nursing hours, information can be transmitted daily to be used in a variety of ways. For instance, these data can be used to balance the nursing work load by assigning patients to nurses, to distribute new admissions and to adjust staffing among nursing units, to monitor utilization and auditing care on a weekly basis, and to obtain precise data for annual budgets and long-range planning. This methodology has been successfully applied, with appropriate modifications, in both short-stay and long-term care facilities.

Miller Elizabeth A
Sir Charles Gairdner Hospital, Perth (Australia).
Staffing with the Aid of Dependency Indices.
Pub. in Nursing Times v72 n32 p113-115 12 Aug 76.

A method is proposed for the utilization of patient dependency indexes in the distribution of available staff, the rostering of staff, and as an aid in the estimation of required staff. Equations upon which the proposed method is based are presented, and their derivation is explained. A mechanical method is presented for the practical use of the equations in calculating theoretical staff distributions. The use of the method in rostering is outlined. The equations are modified to reflect a model upon which it is suggested that a valid staff requirement assessment can be based. One of the key considerations in the proposed method involves the calculation of average nursing hours available for each occupied bed in a hospital and the adjustment of this figure to account for differences in ward workload. Four basic types of data are required for the method: (1) number of occupied beds in each hospital ward; (2) total number of occupied beds in a hospital; (3) total number of ward staff available for the period under consideration; and (4) patient dependency total (sum of all individual patient dependency figures) for each ward.

Miller Holmes E, Pierskalla William P
Rensselaer Polytechnic Inst., Troy, N.Y.
Nurse Allocation with Stochastic Supply.
22p 1974 Available NTIS HRP-0010233

A mathematical analysis is presented of the problem of allocating hospital nursing staff on a daily basis. Regardless of the type of nurse scheduling system used by a hospital, the daily schedules specify how many nurses of the various nursing classes (registered nurses, licensed practical nurses, nursing aides) are scheduled to work in the various nursing units. The schedules are generated under certain assumptions about demand for nursing services and about the availability of nurses to work on a scheduled day. As the scheduled day approaches, actual supply and demand often differ from projections. The allocation problem becomes one of how to adjust the actual supply of nurses reporting for work to meet the updated demand for nursing services. This adjustment may involve moving nurses across classes and/or units. A model of the allocation process is presented that permits the allocation of nurses across all nursing classes and units, given a roster of nurses scheduled to work in those classes and units. The model treats the supply of nurses reporting for work as a random variable, and thus is applicable to situations in which the supply of nurses in not known with certainty. Sample problems

demonstrating the uses of the model are presented, and the ways in which the model can be modified to handle specific constraints are described. Mathematical formulations and a list of references are included. Technical terminology is employed extensively.

Miller Holmes E, Pierskalla William P, Rath Gustave J
Rensselaer Polytechnic Institute, Troy, N.Y.
Nurse Scheduling Using Mathematical Programming.
28p May 75 Available NTIS HRP-0010319

The nurse scheduling problem i.e., how to generate a configuration of nurse schedules that satisfies both hospital staffing requirements and individual nurses' preferences is stated mathematically, and a mathematical programming format is used to develop a solution. The nurse scheduling problem is formulated as one of selecting the configuration of schedules that minimize an objective function which balances the trade-off between staffing coverage and schedule preferences of individual nurses, subject to certain feasibility constraints on the nurse schedules. The solution involves a cyclic coordinate descent algorithm. Preliminary tests in which a small sample problem was used to compare the proposed algorithm with a branch and bound algorithm known to yield the optimal solution demonstrated that the proposed algorithm generated schedules almost as effective as the optimal ones in far less computer time. More extensive tests conducted over a six-month period for the day shift of one unit in an 800-bed hospital allowed comparisons to be drawn between schedules generated by the algorithm and those generated by the hospital. The algorithm was found to generate solutions which were superior in several ways to those arrived at by the hospital scheduling process. The model is described as realistic in the sense that it can handle any number or type of schedule pattern and staffing level constraints, and is general enough to be applied in a variety of hospital settings involving differing operating policies. Supporting data and mathematical formulations are included.

Mills Richard
City of Hope National Medical Center, Duarte, Calif.
Simple Method for Predicting Days of Increased Patient Census.
Pub. in Jnl. of Nursing Administration v7 n2 p15-20 Feb 77.

It is important for nursing administration to be able to predict patient load and thus schedule adequate staff. This article presents a method for predicting days of the month on which an extraordinary number of patients would require an increase in nursing personnel. By using past populations, identified as being over the normal number, i.e. one standard

deviation (SD) from the mean, increased patient census can be predicted. There are six steps: 1) break down the daily patient census for a single month into categories you wish to predict; 2) find the mean and SD for each category; 3) for each day, add the number of patients above +1 SD; 4) repeat steps 1 through 3, adding the results until six consecutive months are completed; 5) for each category determine what proportion of patients were represented each day; 6) choose cutoff point beyond which any higher number indicates the probability of a high influx of patients. This indicator must be updated each month by removing the earliest month and adding the current one. Four additional points must be kept in mind about this method: 1) the predictor is likely to identify more days with extra patients than the actual result; 2) the usefulness may be preempted by scheduling inflexibility or union regulations; 3) effectiveness is directly related to the categories chosen; and 4) the predictor is supposed to augment other staffing techniques.

Minetti Robert, Hutchinson Joseph
Blue Cross of Western Pennsylvania, Pittsburgh.
System Achieves Optimal Staffing.
Pub. in Hospitals, Jnl. of the American Hospital Association v49 p60-62,64 1 May 75.

Performance analysis and review (PAR) is a staff leveling system developed by Blue Cross of Western Pennsylvania's management engineers and used by 20 acute care general hospitals. The PAR staff leveling system achieves optimum staffing on every floor for every shift. PAR consultants prepare a table of organization for every floor of a hospital, including registered nurses, licensed practical nurses, nursing aides, ward clerks, and orderlies. Personnel needs are projected on the basis of an average patient census, and relief personnel are factored into the table on a ratio that approaches three full-time employees for each two positions that must be staffed daily. The patient classification system measures the degree of dependency of each patient according to the following four categories: ambulatory, partial, complete, and special / constant. Head nurses classify all patients on a continuing basis and the number of patients in each class are calculated before each shift change. Once optimal staffing per shift is achieved, the system is monitored by submitting monthly data to the Blue Cross of Western Pennsylvania's computer center. A report is returned to the administrator and director of nursing service showing the number of patient days, number of hours required to meet effective census needs and number of hours actually used, the relationship between hours used and hours budgeted, the utilization of personnel, and the shift utilization. Without staff leveling, many hospitals waste up to 25 percent of medical - surgical nursing costs. Sample

table of organization, staffing table, and staffing adjustment report are reproduced.

National Center for Health Services Research, Rockville, Md.
Evaluation of a Medical Information System in a Community Hospital.
25p 1976 Available NTIS HRP-0013430

A study of the impact of a computerized medical information system on El Camino Hospital in Mountain View, California is summarized. The evaluation concerns the impact of the system on the organization and administration of health care delivery at the hospital. The Technicon system is a real time, computer-based system that interacts with nurses, physicians, other health care professionals, and hospital administrators in the delivery of care to patients. The system affects all facets of the hospital environment. The summary includes a brief background description of the hospital and of the Technicon system, plus the major findings, conclusions, and recommendations of the evaluation. Findings concern changes in staffing levels after introduction of the Technicon system, effects of the system on nursing activities, evaluation of the system by nursing and medical staff members, the physician's use of hospital services, comparative analysis of medical records for accuracy and completeness, impact of the system on hospital performance, and qualitative impact in ancillary and support areas. The system is shown to have had a favorable impact on the organization and administration of El Camino Hospital. It is anticipated that such systems will expand in scope and use in the future as significant aids to utilization review and patient care audit, in on-line intervention to prevent diagnostic and treatment errors, and as information sources. Supporting data and a photograph of the 'Video-Matrix-Terminal' used in the system are included.

Norby Ronald B, Freund Louis E
Medicus Systems Corp., Chicago, Ill.
Model for Nurse Staffing and Organizational Analysis.
Pub. in Nursing Administration Quarterly v1 n4 p1-13 Summer 77.

A comprehensive model for nurse staffing and organizational analysis is presented which enables those in leadership positions to document, analyze, and problem-solve in the area of personnel utilization with full knowledge of how staffing decisions are affected by and impact other aspects of the department. In this model, individual patient care assignments, which are constructed at the unit level by unit leadership personnel, are used to determine the number and types of staff needed. The workload is assessed through use

of a psychometric technique called constant-sum paired comparisons, which determines the difficulty of various assignment elements. A plan for the utilization of personnel is then developed based on the assignment of staff to each of these assignment elements. The deviation of individual units and shifts from these desired goals for care assignments to various personnel levels can be monitored easily. Methods for daily data collection in relation to workload requirements and staffing adjustments are needed in order to structure variable staffing. Multiple options are available for processing data. A programmable calculator may be used when computer capabilities are not available. Programs have been developed for this calculator to compute staffing, allocate available staff, construct the management report, and create quality of care scores. The management report produced in this model provides a one-source document which creates a unit profile enabling comparisons of care quality, unit workload, census, staffing requirements, adjustments, actual staffing, illness/absence rates, overtime, and other desired data.

Norby Ronald B, Freund Louis E, Wagner Barry
Saint Francis Hospital, Evanston, Ill.
Nurse Staffing System Based Upon Assignment Difficulty.
Pub. in Jnl. of Nursing Administration v7 n9 p2-24 Nov 77.

A comprehensive approach to nurse staffing based upon assignment difficulty is described. Activity difficulty and the capacity of various levels of staff to handle difficulty in relation to quality objectives are the foundation upon which long-range and variable staffing recommendations are made. The approach includes an instrument that measures quality of care after the staffing recommendations are implemented, providing for unit-by-unit monthly management reports based upon information gathered in daily monitoring of staffing needs. The model for nurse staffing and organizational analysis includes components for patient care requirements, patient care workload, capacity by personnel level, variable staffing, long-range staffing, assignment structure, management reporting, and quality of care. Patient self-sufficiency measures are applied to classify the patients' care requirements, and the numbers of the patient classes are used to designate the nursing care requirements. The four patient types designated include minimal care, partial care, complete care, and intensive care, with weighting given to critical functions, as well as to orchestration of care functions. For instance, the composition of the day nursing staff would be different from that of the evening and night staffs due to different patient care needs at different times of the day. Implementation of the staffing approach in 30 medical/surgical nursing units in seven hospitals demonstrated the viability of the approach

over time. This is a working system, having sensitivity to individual agency characteristics and an ability to relate quality to staffing alternatives.

Nursing Personnel Recommendation, 1977.
Pub. in Philippine Jnl. of Nursing v47 n1 p9-24 Jan-Mar 78.

Ormeaux Susan Des
Implementation of the C.A.S.H. Patient Classification System for Staffing Determination.
Pub. in Supervisor Nurse v8 n4 p29-30 33-34 Apr 77.

The director of a nursing service at a local 216-bed general hospital implemented a revised staffing determination based on the Commission for Administrative Services in Hospitals (C.A.S.H.) patient classification system in an effort to resolve problems of imbalance between patient needs and staff. In selecting the program to be implemented, a search was conducted to identify a program which would predict staffing requirements on a shift-to-shift basis and predict not only the number of personnel needed for each 8-hour shift, but also the level and mix of personnel required. An extensive literature search indicated that there are no existing systems that have established the level or mix of personnel required -- only the number of care hours needed. Under the C.A.S.H patient classification system, which was selected to determine the number of needed care hours, patients are categorized according to type of illness, emotional status, medicines and treatments ordered, and general health; the number of care hours needed are then calculated from the number of patients in each category. Small group discussions were held with supervisors, head nurses, and charge nurses for each shift to facilitate acceptance and implementation of the new system. A table presenting guidelines for use in patient categorization is included, as is the patient categorization worksheet used in the program.

Osinski Elsie G, Morrison William H
The All-RN Staff.
Pub. in Supervisor Nurse v9 n9 p66, 69-70, 73-74 1978.

Plummer Johanna
Kingston General Hospital (Ontario).
Patient Classification Proves Staffing Needs.
Pub. in Dimensions in Health Service v53 n5 p36-38 May 76.

Kingston General Hospital (Ontario, Canada) has implemented a patient classification scheme that has facilitated the

staffing of units and has eliminated many frustrations for the supervisory staff. Motivated by economics, the hospital signed a 1-year contract with the Medicus Corporation of Chicago to develop classification of patients by need, computerized preferential scheduling for staff, monitoring of quality patient care and management reporting. A team moved into the hospital and spent 3 months getting to know the staff and assessing the situation. Each staff member was interviewed regarding preferences in scheduling, and nursing staff participated in the committee work involved in patient classification. The nursing staff was educated to the system before the first two nursing units were used in a pilot project. The system calls for part-time or full-time floating staff either in or out of wards, according to the needs. There are four classification categories based on number of hours of care per 24 hours: (1) patients requiring 0-2 hours of direct care; (2) patients requiring 2-4 hours of direct care; (3) patients requiring 4-10 hours of direct care; and (4) patients requiring more than 10 hours of direct care (usually an intensive care patient). The system involves classification of the patients by the types indicated and other information regarding special need; the staffing coordinator has a single workload index for each unit by 8:30 a.m. daily. Initial implementation and orientation took approximately 2 weeks. A sample classification sheet is provided.

Roberts Edward B, Hirsch Gary B
Strategic Modelling for Health Care Managers.
Pub. in Health Care Management Review p69-77 1976.

Strategic modeling methods are described for determining whether a health program will succeed or fail. Three advantages of strategic models are noted: (1) they help to make decisions concerning program design, resource allocation, and the choice of program policies; (2) they can be used before any resources have been committed to a program to assess the impact of that health program on its sociomedical environment and the effect of environmental changes; and (3) they permit planners to study health problems and find leverage points where the investment of health care resources results in the greatest return. The role of strategic modeling in HMO (health maintenance organization) planning is discussed. The process of developing a visual cause and effect model of the type illustrated for an HMO can be useful when initiating a strategic planning effort. It helps to coalesce a multidisciplinary task force around a key goal, strategy, or policy issue. Seeing interrelationships among different functional areas of a health organization can generate insights into common objectives and interdependencies. The application of visual modeling to several complex health

settings is examined. The development of strategic health care models is discussed. It is shown that manpower planning has become the focus of two modeling projects that are attempting to understand supply, demand, and impact upon care in the separate areas of dental care and nursing.

Smith L. D, Wiggins A
A Computer-Based Nurse Scheduling System.
Pub. in Computers & Operations Research v4 n3 p195-212 1977.

The paper describes a computer-based system for scheduling nurses in a St. Louis hospital. List processing and problem oriented data structures provided a flexible framework for the development of a heuristic which considers a complicated set of constraints when generating monthly shift schedules. The scheduling system covers several staff categories (supervisors, RNs, LPNs, aides, secretaries), considers individual preferences for shifts and days off, includes part-time employees, accommodates special requests for days off or particular shift assignments, and provides a convenient interface for the scheduling clerks who make final adjustments to the computer-generated schedules. (INSPEC)

Somers June B
Space Age Computer Systems, Inc., Washington, D.C.
Purpose and Performance -- A System Analysis of Nurse Staffing.
Pub. in Jnl. of Nursing Administration v7 n2 p4-9 Feb 77.

The system approach is employed to analyze the characteristics and functions of hospital nurse staffing. It is noted that the system of nursing and its goal of staffing to meet patient needs do not operate in a vacuum. Pertinent considerations in the application of a system approach to hospital nurse staffing are examined, including goals of the system, the environment in which the system operates, resources available to the system, tasks of component parts of the system, and system management. The relationship between nursing and hospital and global health care systems is explored. Environmental influences on system operation and resources available to the nursing system for use in reaching its stated goals are discussed. The emergence of nursing skill assessment tools is reported. The structural organization of personnel resources is addressed, and activities and measures of goal achievement are described. The role of audit or evaluation of the quality of care in achieving the goals of the nurse staffing system is considered. Steps involved in system management are outlined with emphasis on the flow of information in the staffing system.

Stevenson Joanne S, Brunner Nancy, Larrabee Jean
Ohio State Univ., Columbus. Center for Nursing Research.
Plan for Nurse Staffing in Hospital Emergency Services.
63p 1978 Available from National League for Nursing, 10 Columbus Circle, New York, NY 10019.

The need to improve the allocation of nursing personnel resources in the emergency care services of the Ohio State University Hospitals resulted in the development of an emergency patient categorization system that could be used in planning nurse staffing. A model was developed based on the hypothesis that emergency care demands are patterned phenomena that can be studied, simulated, and predicted within acceptable confidence intervals. During the first phase of the study a set of criteria for categorizing the emergency patients according to nurses' perceptions of needs for nursing care was developed. These criteria, based on nursing actions, patient characteristics, and priority for care, resulted in a four-level system of categorization. The second phase of the study provided a quantitative measure of the nursing workload generated by the direct care of patients in each of the four categories. The data analysis in this phase was primarily focused on registered nurses and patient care technicians since data about other personnel were insufficient for analysis. During the third phase of the study, a technique for identifying patient demand patterns was implemented. This technique, which produced a graphic model of patient demand, composed a pattern of patient arrivals for each 2-hour interval over a 4-week period and a superimposed distribution of patients by category in each 2-hour interval for 1 of the 4 weeks. The technique provided a procedure for obtaining ongoing data about the pattern of patient arrivals by category over time, so that arrivals in the future can be predicted and nurse staffing planned accordingly.

Strilaeff Florence
Saskatchewan Univ., Saskatoon. Dept. of Sociology.
Shiftwork and Turnover of General Duty Nurses.
Pub. in Dimensions in Health Service v53 n8 p36-38 Aug 76.

The impact of hours of work on the disposition of general duty nurses to resign was studied. An in-depth study of three matched wards, differentiated by high, medium, and low turnover rates at one public general hospital was conducted to attempt to explain different turnover rates. Following this exploratory phase, a questionnaire was distributed to 333 general staff nurses employed on 30 closely matched medical - surgical wards in four general hospitals. The erratic shift work contributed to the general staff nurses' disposition to leave. Nurses were asked to categorize their responses and interest in leaving. Of the 147 respondents

who indicated a high disposition to leave, 85 were working on wards characterized by high erratic hours of work and 62 worked on wards characterized by low erratic hours of work. Of the 39 respondents who indicated a low disposition to leave, only 15 percent were employed on wards characterized by high erratic and 38 percent were employed on wards characterized by low erratic hours of work. Two aspects of work hours which differentiated the responses from the high and low turnover wards were the preponderance of evening and night shifts and the long stretches of work between days off. Mechanisms of resolving the conflicts of work and home imposed by erratic shift work are 'booking-off-sick' and trading with a willing colleague. It is suggested that nurses might be more accepting of shift work if they participated in scheduling their hours.

Swanberg Gloria, Smith Eunice Lawrenz
Herman Smith Associates, Hinsdale, Ill.
Centralized Scheduling -- Is it Worth the Effort.
Pub. in Nursing Administration v1 n4 p51-57 Summer 77.

Both hospital administrators and nursing administrators frequently underestimate the magnitude of the task of scheduling nursing personnel for patient care units and commonly fail to recognize its importance in consistent quality of care, job satisfaction of employees, and cost containment. Centralized scheduling of nursing personnel provides fairness for all employees and opportunities for cost containment by better use of resources. Although problems often seem to increase rather than decrease with the institution of centralized scheduling, these problems are often long-standing organization and management problems which were previously unrecognized. An effective centralized scheduling system is feasible and has extensive benefits for the total nursing service. The following guidelines should be adhered to if the system is to work: a realistic personnel budget based on master staffing patterns and procedures to accommodate variations in workload should be developed with the active participation of head nurses; scheduling policies should be established, publicized, and enforced; scheduling personnel should be carefully selected and oriented to meet the specified needs of the scheduling program; head nurses should have opportunities for frequent, meaningful communication with the scheduling staff; and line and staff relationships should be clearly delineated and understood.

Tien James M
New York City-Rand Inst.
Methods for Assessing Inpatient Nurse Staffing Requirements.
79p Apr 74 Available from the Rand Corporation, 1700 Main St., Santa Monica, Calif. 90406, $5.00.

A general inpatient nurse manpower requirement model is developed that takes into account the fixed standard used by the New York City Health and Hospitals Corporation (HHC) as of 1971 for estimating inpatient nurse staffing needs or requirements. The model is based on separating the direct and nondirect care provided by nursing staff in an inpatient ward, and on recognizing that patients can be categorized according to the level of nursing care required. In a separate study, three categories of patient need (self, intermediate, and intensive care) were identified, the amount of bedside care required by each category was determined, and the amount of time required for nondirect care activities was found to remain fairly constant at about 20 hours for a 29-30 bed ward for an eight-hour day shift, regardless of the number of patients, their classifications, or the number of nurses assigned to the ward. Based on these findings and on a patient need survey of HHC hospitals, a new inpatient nurse staffing standard is derived from the requirement model. The new standard is less subject to sudden variations with changes in occupancy rates, and suggests that fewer nurses are required at higher occupancy rates. Details of the development of the mathematical model are provided, and it is applied to the nurse staffing situations of two HHC hospitals. In addition to the consideration of requirements for fixed nursing staff, methods for determining the per-diem nursing staff requirement are presented. In both instances, the report deals only with the requirement for nonsupervisory nursing personnel (i.e., staff nurses), practical nurses, and nurse's aides, with special emphasis on the staff nurse requirements. Supporting data, flow charts, and mathematical formulations are included. Portions of this document are not fully legible.

Tilquin Charles
Montreal Univ. (Quebec).
Patient Classification Does Work.
Pub. in Dimensions in Health Service v53 n1 p12-13 16/Jan 76.

A scheme for subdividing patients into different groups according to their nursing care demand is described. The classification instrument components are: a list of criteria for determining patient class and weights assigned to each class which serve to estimate nursing personnel requirements. The classification of patients improves management of nursing staff and provides better quality of care. The instrument is also useful when it is applied to distribute personnel during

each shift among various hospital units in such a way as to meet patient needs with personnel and situational constraints considered. In broader applications, the classification scheme could be used to evaluate effectiveness of nursing resources management in various hospitals and institutions. Comparing hospitals in patient class units, rather than in broader criteria, also ensures that comparisons are made with equivalent data. Application of the classification scheme at Ste. Justine Hospital for Children in Montreal, Canada, is described to illustrate the effectiveness of the technique. Not only were nursing personnel there accepting of the instrument in the experimental stage, but they also extended its practice to other nursing units of their own volition. Although the classification scheme developed at Ste. Justine Hospital was designed for pediatric patients, the scheme could be easily adapted to adult and mixed patient populations. Patient classification is recommended as a primary administrative tool in health care delivery.

TransCentury Corp., Washington, D.C.
Adult Day Care in the U.S.: A Comparative Study. Volume I. Executive Summary.
30p 2 Sep 75 Available NTIS PB-248 930/0

A representative sample of the known universe of 'adult day care' centers designed to meet health maintenance and social needs, and in some cases rehabilitative therapy needs, were studied. Findings showed that some of the centers serve patients with health care characteristics as varied as those exhibited by nursing home patients. Findings suggest that adult day care, when properly designed, may be a viable alternative to 24-hour inpatient care. From spectrum studied, two distinct models emerged, differentiated largely by the services provided, staffing patterns, participant characteristics, and operating costs. Model I is characterized by its relatively heavy emphasis on health services. Model II emphasizes day time supervision for generally less impaired (than Model I) participants. On the average, a tendency to give appropriate care is a special strength of adult day care programs. Those studied indicate a close match between staff health care capability and needs of the patients. Portions of this document are not fully legible. (NTIS)

Underwood Alice B
Chicago Univ. Hospitals and Clinics, Ill. Arma Wyler Children's Hospital.
What a 12-Hour Shift Offers.
Pub. in American Jnl. of Nursing v75 n7 p1176-1178 Jul 75.

Nurses in a pediatric intensive care unit experiencing

staffing problems made a successful change to a 12-hour shift. The original staffing pattern at the Wyler Children's Hospital (Chicago, Ill.) called for two nurses for four patients per 8-hour shift. This arrangement proved inadequate, however, and the staff was working overtime to provide the necessary 3-to-4 ratio. It was decided that the unit would experiment with two 12-hour shifts, which would permit the nurses to work 3 days one week and 4 days the next. Three nurses would be present on each shift. The agreement for the 3-month pilot study specified that all registered nurses except the head nurse would work the prescribed schedule (7:00 a.m. to 7:30 p.m. and 7:00 p.m. to 7:30 a.m.), that the nurses would receive a 30-minute lunch break and two 15-minute rest periods per shift, and that they would receive overtime compensation at one-and-one-half times the basic hourly rate after 40 hours in a calendar week. An assessment of the change after 3 months indicated that nurses spent fewer days on duty, were involved in less commuting, had safer traveling hours, had overtime in every paycheck, spent less time away from the bedside, and could develop a closer rapport with patients. The management was able to cover their sick days and overtime needs more easily. It was also found that fewer staff positions were needed. At the end of 10 months, the staff indicated a desire to stay on the 12-hour shift. A sample scheduling sheet is included.

University Hospital, Ann Arbor, Mich. Hospital Systems Improvement Program.
SCALE - Nursing Staffing Program.
33p 1975 Available NTIS HRP-0014229

The SCALE (systems for control and analysis of levels of effectiveness) nurse staffing program is intended to aid nursing personnel in the accurate determination of staffing requirements and to provide feedback to nursing personnel on how well staff members are utilized. A standard number of hours of nursing care required per patient day can be computed with the SCALE program. Standard hours per patient day are based on an average, partial - care patient on a medical or surgical nursing unit. Monthly nursing staff utilization reports for each participating nursing unit are outputs of the SCALE program. A detailed explanation of staffing requirements and nursing standards incorporated in the SCALE program is provided. The development of a patient classification system which categorizes patients in terms of individual care requirements is discussed. A personnel guide is used to indicate the recommended allocation of total nursing staff hours to registered nurses, licensed practical nurses, and auxiliary personnel. Nursing standard data forms, a staffing hours guide, a patient classification form, a personnel guide, a patient and personnel summary, a nursing hours report, and a nursing staff utilization report are

included.

Verzi Martin A
Borgess Hospital, Kalamazoo, Mich.
Task Audit Program (TAP) Pinpoints Staffing Needs.
Pub. in Hospitals, Jnl. of the American Hospital Association v40 p56-59, 121 Aug 66.

A method by which hospitals can determine the proper number of employees needed for each hospital function is described. The task audit program (TAP) uses a formal table of hospital organization and develops a staffing guide for each organizational element with proper adjustments for size and volume of work. A separate guide is developed for each kind of nursing unit and for the various service departments. TAP utilizes a work distribution chart to establish the kinds of tasks that must be performed in each organizational element. Task lists prepared by each employee and activity lists prepared by supervisors are the basis of the work distribution chart which shows for each unit or department: (1) activities performed according to the number of hours required for each, (2) total man-hours devoted to each activity by all individuals in the department or unit, (3) time spent by each individual in each activity, (4) listing of individual workers in order of the importance of their responsibility to the unit or department, and (5) work count data, e.g., number of beds made, etc. Based on the work distribution chart of each organizational element, a staffing guide is developed to provide guidance for determining the number and kinds of personnel required. An additional component of the staffing guide is performance standards developed to measure personnel requirements against work loads. Once the staffing guide is completed, an efficiency index, or staffing ratio, can be determined for the entire hospital. Experience with TAP at Saint Joseph's Hospital, South Bend, Indiana is recounted. Based on principles that have general applicability, TAP can be used by all hospitals, regardless of size, location, or type of service. Sample activity and task lists, work distribution chart data, and performance time standards are provided.

Veterans Administration, Washington, D.C. Dept. of Medicine and Surgery.
Methodology for Developing Staffing Criteria for Ward Administration. Special Study 10-3: Nursing Service Staffing and Quality Control System.
152p Jan 68 Available from University Microfilms International, 300 N. Zeeb Road, Ann Arbor, MI 48106.

Staffing procedures and criteria are described and illustrated for nursing ward administration in Veterans'

Administration hospitals. Terms incorporated in the procedures and criteria are defined. These terms include allowances, allowed time, average time, element (subdivision of the work cycle), leveled time, procedure flow chart, standard time, standard time data, tasks, and work units. Procedures accomplished by ward clerks in several Veterans' Administration hospitals are used as the basis for evaluating the extent to which ward clerks can relieve nursing personnel of certain administrative duties. The objective is to enable nursing personnel to concentrate on professional aspects of direct patient care. Ward administration procedures are shown in flow charts, and a building block approach is employed for the development of standard time values for ward administration procedures. Basic building blocks are defined as time values for work units at the task level. A system for auditing the staffing procedures is reported, and staffing criteria for determining ward clerical personnel requirements are listed. It is pointed out that the staffing criteria are sensitive to variables in workload, differences in hospitals, patient classification, ward nursing units, and ward turnover rates. Flow charts and procedure lists for ward administration are included.

Wandel Sten Erik
Stanford Univ., Calif. Dept. of Industrial Engineering.
Three-Stage Probabilistic Programming Model for Manpower Management: A Nurse Staffing Example.
221p Dec 73 Available from University Microfilms International, 300 N. Zeeb Road, Ann Arbor, MI 48106.

The development of new and more flexible procedures to support anticipatory planning of recruitment, training, transferring, and discharging personnel has been the focus of this study. Literature on nurse staffing, manpower planning, production planning, and probabilistic programming is reviewed, and a conceptual framework is presented for each of these areas. Two new solution approaches for mathematical programming and design variables forming a three-level model (policy, allocation, and recourse decisions) are suggested. A paradigm of model formulation, application, and experimentation is developed and adapted to operating a nurse staffing system for a hypothetical hospital. It appears that as much as 11 percent cost savings can be obtained by implementing more flexible, anticipatory, and active mobility planning. The paradigm may be useful to persons working with formulation or utilization of quantitative models for management support. The concepts and procedures are applicable to settings where both short-term and seasonal variations in supply and demand are large and uncertain, the demand cannot be deferred without high penalty, the end products cannot be easily inventoried, capacity is not readily changed, highly specialized manpower represents a

large component of total costs, and quality is crucial. The proposed model includes uncontrolled variables as stochastic parameters and allowance for later recourse actions, and also design and policy variables as controllable parameters. References are provided.

Ward A. R
New Method of Nurse Rostering.
Pub. in Australasian Nurses Jnl. v7 n3 p23-24 Oct 77.

Warner D. Michael, Prawda Juan
Michigan Univ., Ann Arbor.
Mathematical Programming Model for Scheduling Nursing Personnel in a Hospital.
Pub. in Management Science v19 n4 p411-422 Dec 72.

A mathematical programming model for scheduling nursing personnel in hospitals is described. The nursing personnel scheduling problem is defined as the identification of that staffing pattern which specifies the number of nursing personnel within each skill class to be scheduled among wards and nursing shifts of a scheduling period; satisfies total nursing personnel capacity, integral assignment, and other relevant constraints; and minimizes a 'shortage cost' of nursing care services provided for the scheduling period. The scheduling problem is posed as a mixed-integer quadratic programming problem which is decomposed by a primal resource - directive approach into a multiple - choice programming master problem with quadratic programming subproblems. The point of departure for the present model from previous work on the scheduling of nursing personnel is its emphasis on maintaining the integral and capacity constraints of the problem. The demand for nursing care services is assumed to be known, becoming an exogenous variable to the scheduling model. The model was tested on six medical-surgical-orthopedic wards of a 600-bed acute general hospital in Louisiana. Initial results suggest that a linear programming formulation, with a post - optimal feasibility search scheme, may be substituted for the multiple - choice master problem. Supporting test data and mathematical formulations are included.

Werner June, Church Olga, Esposito Nancy T, Anderson Rhonda, Arp Selma
Evanston Hospital, Ill.
Evanston Story: Primary Nursing Comes Alive.
Pub. in Nursing Administration Quarterly v1 n2 p9-50 Winter 1977.

The primary nursing care model implemented at the Evanston

Hospital, Evanston, Illinois is detailed. Efforts to improve the nursing department at the hospital from 1966 to 1971 were based on three premises: (1) the department was to be administered as a facilitative model; (2) leadership staff in the department were to be selected on the basis of their clinical excellence and leadership potential; and (3) department policy was to be developed collaboratively, seeking consensus rather than by majority rule. Professionalism was to be based on accountability. A work assessment project was initiated in 1971. Major objectives included formulation of a nurse staffing and scheduling system based on patient needs, and the analysis of the organization and functions of personnel involved in patient-care delivery. A modular nursing model was developed in which patient care is performed by one or two nurses who are assigned to a relatively small group of patients. Qualified registered nurses function as leaders. The experiences of nurses at the Evanston Hospital during and since the implementation of modular nursing are reported. These experiences deal with the provision of primary care nursing and its evaluation, the establishment of a pilot unit for primary care nursing, fiscal management, and the relationships between primary care nursing and the pharmacy and the use of a unit dose system for medications, with discharge planning, with the specialty unit, and with the student. A schematic for the cost-effective organization of a nursing department is included.

Western Interstate Commission for Higher Education, Boulder, Colo.
The Field Development Component of the State Modeling Activities. Final Rept. Analysis and Planning for Improved Distribution of Nursing Services.
167p Jan 77 Available NTIS HRP-0017545

New ways of achieving more equitable distribution of nursing personnel and new ways for determining the appropriate dimensions and characteristics of the nursing component are described. An 18-month field development activity reports results of pilot testing of the State model in Illinois, Iowa, New Mexico, Louisiana, and Vermont. Panels of nurses and others concerned with nursing in each State reviewed preliminary work on procedures for analyzing nursing data of their States, provided consultation to the analysis and planning project staff concerning issues and factors, and discussed the potential usefulness and limitations of the related data analyses and modeling techniques. The panels were concerned with providing services in rural areas, inner cities, low income and minority group communities, as well as with the role of nurses in increasing access, availability, and quality of health care. Each State has prepared a chapter including a summary of health care and nursing issues

in the State, examples of the recommendations of the panel members, and the potential usefulness and limitations of the State modeling products in aiding decisionmakers in analysis and planning for the improved distribution of nursing personnel and services. Other chapters cover the need for nurse planning at the State level, the activities involved in the field development process, common concerns raised by State groups, a comparison among the State panels, and the panelists' appraisal of the field development process. Information relevant to the pilot project, a bibliography of recent State nursing studies, and a partially annotated bibliography are appended.

Young John P
Johns Hopkins Univ., Baltimore, Md. Dept. of Health Services Administration.
Integrated System of Patient Assessment, Classification, and Nurse Staffing for Long Term Care.
87p 1976 Available NTIS HRP-0025149

This research study was an attempt to develop an integrated approach to patient classification and nurse staffing for long-term care facilities. A model was developed for patient assessment in order to classify patients into levels of care required. The classification system was then related to demand for nursing services, categorized by care areas for each of the three patient groups of the model: skilled nursing care, intermediate A care, and intermediate B care. Effective allocation and assignment of nursing care activities was modeled by means of mathematical programming techniques, making possible the presentation of alternative nursing strategies as a function of patient population mix and cost constraints. The patient assessment instrument consists of 12 health status indicator variables based on the patient's ability to function, behavioral status indicators and medically defined conditions. A mathematical programming model was developed to estimate the staff required and its optimal mix of personnel, as well as to allocate nursing time and the assignment of skill levels to patient care demands. Model constraints included the availability of nursing resources, legal staffing requirements and adherence to bounded representations of patient nursing care activities. Extensions of the model were developed to explore alternative staffing policies based on variations in total patient-centered services and related to the personnel budget. Mathematical equations and tables pertinent to the study are included as well as a list of references.

V. STAFFING METHODOLOGIES:

ECONOMIC STUDIES

Altenderfer Marion
Bureau of Labor Statistics, Washington, D. C.
Health Manpower Projections by the Bureau of Labor Statistics.
37p 30 Jan 75 Available NTIS HRP-0003601

Health manpower requirement and supply projections through 1985 are presented by the Bureau of Labor Statistics, Department of Labor, for the following occupations: physicians, dentists, optometrists, pharmacists, podiatrists, veterinarians, registered nurses (RNs), licensed practical nurses (LPNs), and 21 categories of allied health personnel. The projections of requirement are based largely on the Bureau's economic growth model of industry changes and its occupational matrix, while the supply figures are drawn primarily from those of the Bureau of Health Resources Development, Department of Health, Education, and Welfare. A tabular summary of estimated 1972 employment, projected 1985 requirements, and average annual openings is presented for selected health occupations, followed by individual narrative analyses for each occupation. Where available, training data (estimates and projections of degrees granted, completion of training programs, etc.) are included. The data reveal a need (by 1985) for 7,000 replacement physicians, 51,000 RNs, 10,000 dental assistants, 40,000 LPNs, and 74,000 nursing aides and orderlies. The projected percentage of change between 1972 and 1985 is 40 percent for RNs, 191 percent for dental hygienists, 152 percent for medical record technicians, 141 percent for physical therapy assistants, and 96 percent for LPNs. Percentage - wide, replacement needs are smallest for pharmacists, speech pathologists, podiatrists, dentists, and medical laboratory workers. Portions of this document are not fully legible.

Areawide and Local Planning for Health Action, Inc., Syracuse, N.Y.
Data Book for Health Planning. Research Reports.
232p Sep 75 Available NTIS HRP-0005200

Information on the characteristics and health problems of the population and on the availability and use of health-related resources is presented for the six central New York counties served by Areawide and Local Planning for Health Action, Inc.

(ALPHA). The data book is intended as a general reference for legislators, health planners, and administrators and as a tool for ALPHA committees and staff to use in planning and reviewing activities. Baseline data to be required for the formation of a health systems plan and an annual implementation plan are included. The book is organized in five sections: (1) demographic and socioeconomic data (population, employment, land use, transportation, etc.); (2) health and vital statistics (natality, fertility, mortality, morbidity, marital characteristics); (3) human resources (physicians, dentists, registered nurses, allied health personnel, and medical and health training programs); (4) health services and facilities (availability and use of acute care, long term care, ambulatory care, emergency care, home health care, child care, family planning, mental health, and rehabilitation resources); (5) health economics and finances (summary and comparative data on health-related and government-related revenues and expenditures, medical and public assistance, and reimbursement rates). Each section contains a brief introduction, figures, maps, tables, and definitions of relevant terminology. The text discusses potential uses and highlights of the data, limitations and cautions to be observed in the use of certain data items, and the sources of the data. Data are presented primarily on two geographic levels of aggregation, the county and the township. A bibliography is included.

Association of Operating Room Nurses, Denver, Colo.
AORN Survey: OR Staffing, Pay Policies.
Pub. in Association of Operating Room Nurses Jnl. v22 n3 p343-349 Sep 75.

A 1972 survey undertaken to assess staffing patterns in hospital operating rooms throughout the United States is documented. Questionnaires were mailed to all 5,859 operating room supervisors. From the 3,000 responses, 1,200 were selected randomly for analysis, including 1,132 from general hospitals, 57 from federally controlled hospitals, and 11 from specialty hospitals. Findings are presented on the number of operating room registered nurses (RN's), the ratio of operating room RN's to technicians and licensed vocational nurses, methods of staffing, on-call and overtime policies, part-time employees, hours worked, and geographic distribution. In 1972, there were 48,970 operating room RN's and 27,583 operating room technicians working in the United States. The ratio of operating room RN's to technicians and licensed vocational nurses was 1.78 to 1. There were 90 different on-call policies. The most difficult staffing problem in the operating room involved providing personnel for on-call duty. Implications of the findings for operating room RN's, technicians, and nursing service administrators are discussed. Differences in personnel ratios among

hospitals of different sizes, types, and geographic locations indicate that staffing patterns must be based on the availability of staff in a given area and that general staffing guidelines would be difficult to develop. Supporting data are included.

Aure Beverly, Schneider Jack M
Wisconsin Univ. - Madison. School of Nursing.
Transforming a Community Hospital Nursing Service into a Regional Center.
Pub. in Nursing Clinics of North America v10 n2 Jun 75.

The development of a community hospital into a regional perinatal center and the impact of the changes on the hospital's nursing staff are described. The perinatal center is unique among other regional centers in Wisconsin in that it is a university service combined with community hospitals. Representatives of nursing service, nursing educators, administrators, and physicians from two community hospitals and from the University of Wisconsin participated in negotiations that resulted in a merger of the neonatal and fetal - maternal components and personnel of the community and University hospitals into a perinatal center located at one of the community hospitals. Additional nursing personnel for the center were to include nurse clinicians and a master's - prepared nursing coordinator, assistant director, and clinical nurse specialists, all of whom would be funded by both community hospitals and superimposed on the traditional nursing service. The primary objective of the clinical nurse specialists and nurse clinicians was to provide service and education to consumers and health professionals in the center and in the region. The community hospital housing the university obstetric service and the administration of the maternal - fetal component of the center are described, with particular attention to cooperation between nurses and physicians in the development of the service and on new nursing roles that evolved. It is noted that the transition was based on the premise that nursing is the keystone of successful patient outcomes and is on a peer level with medicine.

Bahr James, Badour Geraldine, Hill Helen L
Saint Joseph Mercy Hospital, Ann Arbor, Mich.
Innovative Methodology Enhances Nurse Deployment, Cuts Costs.
Pub. in Hospitals, Jnl. of the American Hospital Association v51 n8 p104,106-109 16 Apr 77.

A computerized system developed at St. Joseph Mercy Hospital, Ann Arbor, Mich., to allocate nursing personnel according to delineated areas of need is described. By September 1974, the system was fully implemented on four large surgical

units. In fiscal 1974 - 1975, the system saved these units approximately $160,000 by reducing staffing requirements for registered nurses by 11 full-time equivalents. Development of the system began with the construction of a classification system for surgical patients based on the hospital's general method of classifying patients according to the level of care they require. For surgical patients, an additional classification -- by type of surgery -- was introduced, and standards of care for each type of surgery were developed. A staffing system designed to draw on a small pool of floating nurses operating only in the four surgical units emphasized responsiveness to fluctuations in demand rather than to fluctuations in staff. A computerized application of the nurse float and staffing program was then developed and implemented. Advantages of the staffing program include improved quality of care due to the improved patient classification system, more efficient deployment of nursing staff, and the dynamic nature of the system. Ways in which the industrial engineering and nursing departments cooperated in planning the system are noted.

Bailey Kathryn E, Thrane Judith M, Brandt Josephine A, Peterson Grace G
Illinois Implementation Commission on Nursing, Chicago.
Nursing Education in Illinois: A Reassessment and a Plan 1975-1980. The Illinois Implementation Commission on Nursing Report of 1973-1975 Activities Related to: Evaluation and Updating of the Illinois Study Commission on Nursing 'Blueprint' for Nursing Education in Illinois, 1968-1980. 64p Jun 75 Available NTIS HRP-0004673

An evaluation and updating of the Illinois Study Commission on Nursing blueprint for nursing education in Illinois for 1968-1980 is presented by the Illinois Implementation Commission on Nursing. The 1975-1980 plan is based on a broad set of principles and recommendations, on knowledge of trends in health care delivery and nursing practice, and on the recognition that changes in public expectations require changes in the education of the nurses who must fulfill those expectations. In Illinois the first priority in educational planning is the rapid expansion of baccalaureate and higher degree nursing programs, with particular attention to areas of the State where opportunities for higher education in nursing are not available. Twelve recommendations are presented which are basic to the plan for nursing education. Following the presentation of recommendations, a plan for meeting nurse manpower requirements in Illinois by 1980 is presented in detail, including statistical information relevant to projected need for nurses in that State. The plan itself includes a statewide summary of nursing education programs projected for 1980, as well as individual plans for each of the State's nine planning regions. Each regional

plan includes background information on the region, a map showing the location of existing nursing programs, and recommendations for each nursing program in the region. Commission activities relative to the facilitation of career mobility in nursing and the improvement of the quality of nursing care of the aging are reviewed briefly. Supporting tabular data, graphs, and a glossary are included.

Boger Robin Z
Abt Associates, Inc., Cambridge, Mass.
Study of the State Role in Financing, Planning, and Coordinating Health Professions Education.
23p Jan 76 Available NTIS HRP-0016802

The participation of various individuals and institutions in the State financing, planning, and coordination of health manpower education is investigated. Health professions included in the study are medicine, osteopathy, podiatry, nursing, and allied health. The role of the State in supporting health manpower education is analyzed. It is shown that States vary widely with regard to goals they seek to accomplish, processes by which decisions on health manpower education are made, and the impact of Federal funds on such decisions. States do not recognize health manpower education as a single appropriation item in State budgets. There is little coordination between those responsible for health manpower planning at the State level and those responsible for decisions on health manpower education. The statement is made that deteriorating economic conditions at the State level and an increase in public accountability for State expenditures have led to a reassessment of the role of health profession institutions and the preeminence of institutional goals in the decisionmaking process. The political context of the funding process is examined. A profile of the decisionmaking process is presented. The impact of different funding strategies for the operation of health science schools is assessed. The problem of coordinating health manpower education with health care delivery is considered. Changes in the State role in funding health manpower education are reviewed.

Brayton James B
Johns Hopkins Univ., Baltimore, Md. Dept. of Pediatrics.
Simulation of Alternate Pediatric Hospital Care Units. Volume III.
276p 1975 Available NTIS HRP-0009703

Volume III of a report on the simulation of pediatric hospital care units contains users manuals for the computer programs involved in the simulation. Instructions for and listings of computer programs developed to perform the care

unit loading part of the simulation and ancillary functions are presented. Included are programs for preparing input data required for the care unit loading and the services and staffing parts of the simulation, as described in Volume I. The programs are written primarily in UNIVAC's Fortran V language. The services and staffing program is a modification of a nursing home simulation program, altered to accept daily changes in census of units and schedule of patient demands. Input and analysis procedures are fully documented. Logic flow charts, examples of computer deck setups, and other illustrations are included. Portions of this document are not fully legible.

Brekke Donald G, Gildseth Wayne M
South Dakota State Dept. of Health, Pierre.
South Dakota Statewide Core Curriculum, Career Ladder and Challenge System. Volume II.
226p 10 Sep 75 Available NTIS PB-251 969/2

As a result of a survey of the training/education system which produces associated health and nursing manpower in the state, the South Dakota Statewide Core Curriculum, Career Ladder and Challenge System Project was undertaken beginning in June 1971. This final report traces the history of the Project. Volume II contains further documentation on the scope of work of the Project; cooperating institutions; outlines of core curriculum courses; core curriculum definitions, rationale, and objectives; and implementation suggestions for core curriculum programs. (NTIS)

Brekke Donald G, Gildseth Wayne M
South Dakota State Dept. of Health, Pierre.
South Dakota Statewide Core Curriculum, Career Ladder and Challenge System. Volume I.
52p 10 Sep 75 Available NTIS PB-251 968/4

As a result of a survey of the training/education system which produces associated health and nursing manpower in the state, the South Dakota Statewide Core Curriculum, Career Ladder and Challenge System Project was undertaken beginning in June 1971. This final report traces the history of the Project. Part I and II outline the funding mechanism and contractual obligations. Part III includes a history, including its methodology and problems. Part IV is a technical section with more thorough information on the goals, activities, experiences and results. Part V contains plans for its future and an evaluation of its life so far. (NTIS)

Bureau of Comprehensive Health Planning, Tallahassee, Fla.
Florida Health Planning Council.
Florida's Unmet Health Manpower Education Needs. A Preliminary Report Requested by the Legislature.
66p Jan 74 Available NTIS HRP-0002700

Findings of a study and recommendations concerning health manpower education needs in Florida are presented in this preliminary report, prepared by the Florida Health Planning Council for the State legislature. Studies relating to current and projected number, distribution, and demand for physicians in practice, emergency room physicians, physician's assistants, dentists and dental auxiliaries, nursing, allied health manpower, osteopathy, and optometry are reported. Tables present information on physicians practicing in Florida, by specialty and by county; recommended number of physicians by specialty per 100,000 population; needs for additional physicians by specialty; task assignment by skill level for dental assistants; estimated number of dental auxiliaries; estimate of required replacement of dental auxiliaries in one year; expected total staffing (1976); total additional requirements (1973-1976); Florida dental licensure experience; and graduates and expected graduates of Florida programs for dental auxiliaries. Generally, it was concluded that Florida's medical education program is adequate, while additional programs for emergency room physicians, physician's assistants, some categories of allied health manpower (laboratory personnel, respiratory therapists, medical record technicians), and osteopaths are needed. Conclusions were not reached with regard to optometry and nursing needs. The reports and documents from which the summaries and recommendations were derived are not included, but are available from the Florida Bureau of Comprehensive Health Planning. Portions of this document are not fully legible.

Bureau of Health Manpower, Rockville, Md.
AHEC: The Decentralization and Reorganization of Health Professional Education and Training. Proceedings of the National Conference on the Area Health Education Centers Program.
132p 1975 Available NTIS HRP-0011790

A national meeting held in Asheville, North Carolina in 1975 to discuss the Area Health Education Centers program (AHEC) was jointly sponsored by 11 universities holding Federal contracts for support of AHEC. The AHEC program is a system that links health service organizations and educational institutions to an academic health science center in order to meet regional and local health manpower needs. Participants, primarily faculty and staff from AHEC settings, considered issues relating to decentralized and regionalized health

professional education. The keynote address, delivered by the Association Director of the Carnegie Council on Policy Studies in Higher Education dealt with the development and legislative expression of the AHEC concept. Five panel discussions are reprinted. These focus on: regionalization and educational program development; interdisciplinary program development; AHEC governance; AHEC and regional educational and health services institutions; and perspectives on the future of AHEC. Reports of round table discussions on allied health, nursing, pharmacy, dentistry, public health, medicine, and evaluation are included. Audience questions and discussion follow each panel report. A list of conference participants is included.

California Nurses' Association, San Francisco.
Guidelines for Assessing Nursing Needs in Regional Areas of California for Preparation of Nursing Personnel.
70p Oct 68 Available NTIS HRP-0003599

The assessment of nursing needs in regional areas of California is addressed, based on guidelines developed by the California Nurses' Association for preparing nursing personnel to meet future needs. Regional areas are defined to include nine regions of California presently designated by hospital and related health facilities and services under comprehensive health planning for California. The preparation of nursing personnel involves preservice, inservice, and continuing education programs. Comprehensive health planning areas in California are illustrated, with a listing of schools, hospitals, and other health care institutions in each geographical area. A discussion is presented on who should be involved in planning for nursing manpower within a region or area and how a planning body should function. Factors which should be considered by regional nursing manpower planners are outlined. Different levels of nursing are discussed (vocational, registered, and graduate level nurses), and new trends in nursing education are examined. The importance of refresher courses designed for inactive nurses who wish to return to work is noted and inservice and continuing education concepts are outlined. Competitive factors which affect the nursing supply are noted. Sources of regional planning information are listed and a bibliography is provided.

Callon Helen F
Wisconsin Perinatal Program, Madison.
Regionalizing Perinatal Care in Wisconsin.
Pub. in Nursing Clinics of North America v10 n2 p263-274 Jun 75.

The impact of regionalization of perinatal care in Wisconsin

is described in an article that summarizes efforts to lower the neonate mortality rate. The perinatal team concept began with a team consisting of a neonatologist and a maternal / child health nurse. Preliminary study of vital statistics revealed much about advances in medicine, hospital delivery, and birth control. Under a grant from the Wisconsin Bureau of Maternal and Child Health, medical students visited 30 of the largest hospitals to compile information on infant birth, prematurity, neonatal death, and fetal death. This study indicated that one-third of neonatal deaths were preventable in hospital of birth, one-third were preventable in a high-risk center, and one-third were not preventable with present knowledge. After opening high-risk neonatal nurseries, the two medical schools visited each hospital to survey resources and make recommendations. Professional educational activities were initiated including one-day institutes for physicians and nurses. Standards for proposed additional perinatal centers specified staffing (number and type of physicians, nurses, and other health professionals; transportation team), extra facilities (maternal intensive care (ICU) high-risk clinic, intrapartum ICU, neonatal ICU, laboratories, followup clinics, communication system); data collection; peer review system; consultation practices; and education. Eight high-risk nurseries were established. The Wisconsin Association for Perinatal Care was established and has educational activities. Neonatal deaths have steadily declined, with the largest decline in deaths at 0-24 hours.

Camberg Lois
Abt Associates, Inc., Cambridge, Mass.
Site Visit Report for the North Dakota Area Health Education Center Program.
43p Nov 75 Available NTIS PB-254 705/7

The North Dakota Area Health Education Center (AHEC) project is one of eleven Bureau of Health Manpower (HRA - DHEW) supported projects which were established to improve the geographic and speciality distribution of health personnel. This report describes the development, organization and activity of the AHEC as well as project antecedents; contextual information; quantitative data on the distribution of project expenditures and characteristics of education activities i.e., medicine, dentistry, nursing, allied health, etc., conducted through the first three years of the project's five year contract term. This report also discusses the major problems encountered and early achievements of the North Dakota AHEC. (NTIS)

Camberg Lois
Abt Associates, Inc., Cambridge, Mass.
Site Visit Report for the North Carolina Area Health Education Center Program.
70p Nov 75 Available NTIS PB-254 704/0

The North Carolina Area Health Education Center (AHEC) project is one of eleven Bureau of Health Manpower (HRA - DHEW) supported projects which were established to improve the geographic and speciality distribution of health personnel. This report describes the development, organization and activity of the AHEC as well as project antecedents; contextual information; quantitative data on the distribution of project expenditures and characteristics of education activities i.e., medicine, dentistry, nursing, allied health, etc., conducted through the first three years of the project's five year contract term. This report also discusses the major problems encountered and early achievements of the North Carolina AHEC. (NTIS)

Central Arkansas Planning and Development District, Inc., Little Rock.
Areawide Health Plan.
80p May 75 Available NTIS HRP-0005786

A comprehensive health care plan is presented for the six counties included in the Central Arkansas Health Planning Program Area. The area includes the State's largest city, Little Rock, and is of high population density compared to the State and the Nation. However, the area also includes more sparsely populated sections. The population is served by a health care system consisting of four large medical centers in Little Rock, 12 hospitals, 32 nursing homes, and two State mental hospitals. Part A of the plan document discusses the purposes and goals of the plan and the plan / work program concept. Part B presents a description of the planning area, including geographic, population, and employment characteristics; areawide and individual county profiles; and area - county health indicator profiles. Part C describes the health delivery system of the area, including primary, secondary, and tertiary care facilities; manpower supply and education; and services. Part D examines the health status of the population, and Part E ranks health priorities for the area, stating the nature of the problem, goals, objectives and recommendations, and resources for each priority item drawn from an areawide survey. The top 10 priority items, in order, are: consumer health information, hospital costs, lack of community mental health services, inadequate public school health education programs, emergency medical service, health care for the poor, health manpower, inaccessibility of health care services, day care services for the aged, and physical therapy services. A summary of

the 1976 work program is provided. Tabular data are included. Portions of this document are not fully legible.

Central Arkansas Planning and Development District, Inc., Little Rock. Health Planning Advisory Council.
C.E.R. Criteria and Standards for Health Care Facilities in Central Arkansas.
62p 1975 Available NTIS HRP-0004524

Standards for expansion or construction of new facilities are given for general / surgical hospitals and nursing homes in the Central Arkansas area. Steps in the capital expenditure review includes notification of intent to make a capital expenditure, consultation with a Central Arkansas Health Planning Program staff member, application submission, application review by State Planning Clearinghouse, Facilities Review Committee and Advisory Council members and finding of either controversial or non-controversial status. If found controversial, the Facilities Review Committee makes recommendations, if found non-controversial, the application is approved. An appeals process is provided. The entire procedure is illustrated by a flow chart. Basic data required when determining need for a hospital or nursing home include information on area, population, existing health care facilities and their availability, staffing, and ability to operate and maintain the facility. Specifics on any building program must be included. Information is provided on admissions by county, with a breakdown by category of beds for each facility. The formula used in deriving long-term care bed needs is presented and projections are made relating to this bed need. An inventory of nursing home beds by patient days and occupancy rate is given for the years 1967 through 1973. Portions of this document are not fully legible.

Ciske Karen L
Misconceptions about Staffing and Patient Assignment in Primary Nursing.
Pub. in Nursing Administration Quarterly v1 n2 p61-68 Winter 1977.

Staffing and patient assignment are two major, but confusing, areas in primary nursing. It is imperative that the head nurse help the staff to develop clinical leadership traits by assessing staff nurses and allowing them to function as independently as possible. Staff nurses must be encouraged to achieve satisfaction from direct patient care by becoming intensely involved with a consistent group of primary patients. Short-term patients may be scheduled for part-time nurses. Care must be taken not to assign to the licensed practical nurse (LPN) the direct patient care that should be

reserved for the registered nurse (RN) alone. An LPN cannot be held accountable for the same responsibility as an RN. The nurse aide prefers to be the assistant for one 'boss,' or primary nurse. There are three patterns generally used for patient assignment: geographic, individual, and promotional. A table shows the advantages and disadvantages of each method. For example, the geographic assignment is well organized, but may lead to an unfair case load. Individual assignment is controlled by the head nurse, but this wastes steps if patients are spread through the unit. The promotional assignment, employing a screening process for only the best professionals, stimulates the staff to show competence; however, it may lead either to a large case load or cost of positions. Above all, the head nurse must practice surveillance over all assignments, because she is ultimately responsible for the quality of care in her unit.

College of the Virgin Islands, St. Thomas. Div. of Nursing Education.
Study of Nursing Needs and Resources in the U.S. Virgin Islands.
194p Apr 76 Available NTIS HRP-0014886

Baseline data were obtained and evaluated on the supply and resources of nurses in the Virgin Islands from September 1973 through April 1976. The data collection phase of the project consisted of two components: (1) an examination of the administrative environment of agencies employing nurses and (2) a compilation of baseline data on the supply and resources of nurses and other types of health manpower. Based upon the analysis of data, anticipated nursing manpower needs and educational programs were projected, recommendations were made for improved nursing education service, and anticipated needs and resources related to health manpower were projected to 1980. The recommendations are concerned with the role and scope of nursing practice, episodic care and nurse utilization, distributive care and nurse utilization, the recruitment and retention of personnel, nursing education needs, and planning for change. Data collection procedures are detailed, and the resulting data are presented in tabular form: vacant budget positions, salary scales, job separations, absenteeism, duplication of clinical services, recruitment, orientation of new employees, staffing philosophies, retention devices, uses and perceived needs for nurse practitioners, registered and licensed practical nurse populations, health manpower education, and membership in professional associations. The coordination and support of nurse manpower development is discussed. Appendixes contain additional information on nursing resources in the Virgin Islands, a list of references, and tables and forms used in the study.

Comprehensive Health Planning Agency of Southern New Jersey, Westville.
Health Manpower in Southern New Jersey.
34p Jan 75 Available NTIS HRP-0003654

Baseline information was collected for the Southern New Jersey region by a task force of the Comprehensive Health Planning Agency to identify existing and future health manpower deficiencies. Section one of the report summarizes information concerning current personnel inventories in several major health professions. Tables present data by county on: physicians in direct patient care; dental manpower; registered nurses and licensed practical nurses; optometrists, podiatrists, and chiropractors; and allied health manpower. A combination of national utilization data and local demographic data is presented in tabular format, and is used to project the numbers of physicians, by specialty, and dentists required in each county to meet the estimated number of visits. Findings of two recent surveys, one to a random sampling of office-based practitioners and one to hospitals and long-term care facilities, identified sizeable shortages of general practitioners, pediatricians, internists, obstetricians, general surgeons, and dentists. Camden, the central medical marketplace, alone has a surplus of physicians. Very few vacant positions are budgeted in office-based practices or hospitals, except for nurses or nursing support occupations. Public health agencies indicate that the only projected area of growth is for sanitary inspectors, registered nurses and home health aides. Conclusions drawn indicate that the total number of vacant budgeted positions is quite low and is not equivalent to the public need for an adequate supply of health care professionals. Portions of this document are not fully legible.

Comprehensive Health Planning Association of Imperial, Riverside, and San Diego Counties, San Diego, Calif.
Health Systems Plan for Riverside County 1976.
265p Jan 76 Available NTIS HRP-0011230

A health systems plan (HSP), representing the basis from which health services and facilities planning decisions will be made, is presented for Riverside County, California by the Comprehensive Health Planning Association of Imperial, Riverside, and San Diego Counties. The format and sequence of presentation of the HSP reflect the broad aspects of a health care delivery system considered desirable for 1981. An introductory overview of the envisioned system discusses system components, social changes, political views, and other factors that affect health care delivery. In a section on health system analysis and needs identification, the planning environment is described, and subgoals and objectives are

identified in the following specific areas: community health education, ambulatory care, community clinics, renal disease services, institutes for medical services and health maintenance organizations, emergency medical services, acute care, cost effectiveness, high risk maternal and newborn services, pediatric care, long-term care, rehabilitation, home care, quality of care, environmental health, and health manpower. Health care resources and needs are analyzed at the county level and by health service area for general acute care hospitals, skilled nursing facilities, intermediate care facilities, acute psychiatric hospitals, and other areas of care in the 1976 health care services and facilities plan. Alternative means of implementation are described for each objective identified. Supporting tabular data and graphs are included. The HSP for Imperial and San Diego Counties is published in a separate volume. An appended volume contains guides and criteria used in HSP development.

Comprehensive Health Planning Council of Northwestern Pennsylvania, Inc., Erie.
Short-Term Skilled Nursing Care.
18p Mar 76 Available NTIS HRP-0009626

Short-term skilled nursing care in northwestern Pennsylvania, and the problems attendant on providing such care, are discussed. Included in the discussion is Medicaid's responsibility for adequate reimbursement to nursing homes for the various types of patients served. For planning purposes, it is recommended that an average length of stay of 60 days be used to determine whether a facility is a long-term care facility or a short-term care facility. It is also suggested that short-term skilled nursing care beds be classified as medical - surgical beds, along with acute care beds, intensive care beds, and coronary care beds. This procedure would enable short-term skilled nursing care beds to be used as a cost containment mechanism. Definitions are given of skilled nursing care (short-term) and skilled nursing facility (short-term). Problems and principles of bed need and manpower need determination are examined, and financial feasibility and cost containment considered. Members of the professional advisory task force are listed.

Comprehensive Health Planning Council of Northwestern Pennsylvania, Inc., Erie.
Guidelines for Developing Home Health Care in Northwestern Pennsylvania.
25p Feb 76 Available NTIS HRP-0009632

Guidelines are presented by the Comprehensive Health Planning Council of Northwestern Pennsylvania for developing comprehensive services that are accessible to the public and

that comply with section 1122 of the Social Security Act. Definitions are provided of home health care, home health care agency, and a coordinated home health care program. Four criteria on which the guidelines are based are: need, manpower, financial feasibility, and cost containment. Each is considered in the context of determination and the formula for such determination. Other considerations include: the provision of comprehensive home health services to all persons without regard to age, race, sex, national origin, financial status, or religion; the standards for hospital-based home health care programs of the Joint Commission on Accreditation of Hospitals be met; and provision of contracts with all area nursing homes to evaluate patients on waiting lists as to their appropriate care. Supporting and supplementary data are presented in tabular format, and a bibliography is provided.

Comprehensive Health Planning Council of Northwestern Pennsylvania, Inc., Erie.
Guidelines for Developing Long-Term Care in Northwestern Pennsylvania.
25p Nov 75 Available NTIS HRP-0009631

The three types of long-term care facilities are described, and guidelines are presented for developing and implementing long-term care. The three types of facilities are: proprietary (tax-paying), nonprofit (non-tax), and public (tax-supported). The level of care provided by these facilities varies from skilled nursing to lesser levels of care such as intermediate or custodial care. It is noted that the proprietary nursing homes emerged as small businesses averaging 25 beds nationally. They are profit-oriented and until recently were subjected to few regulations. Most began as custodial care homes and evolved into nursing homes by offering some degree of nursing service. Many have remained as custodial care homes and are subject to no regulations in Pennsylvania. Nonprofit homes usually are affiliated with churches or charitable organizations. Definitions are provided of the different levels of care. Trends are identified, and problems and principles of long-term nursing care are examined. Among these are: need determination; formula for bed determination; formula for need determination; manpower determination; and determination of financial feasibility and of cost containment. Other considerations include: the necessity for formal written agreements between facilities and hospitals; the authentication of compliance with Federal, State and local regulation; provision of service to all socioeconomic groups regardless of ability to pay; and criteria for replacement or expansion of facilities.

Comprehensive Health Planning Council of South Florida, Inc., Miami.
HPC Organizational Goals and Priorities for 1975. Summary.
26p Apr 75 Available NTIS HRP-0006076

Proceedings of three goal setting and priority setting meetings held by the Comprehensive Health Planning Council (HPCP) of South Florida are contained in this report which includes minutes of the meetings and identifies the five most important health issues in the community. The organizational priorities, as identified by the Board of Directors, the Task Force Chairpersons, and the HPC, include primary care, hospitals, nursing homes, emergency medical services, cost, and the Medical Center Complex at Cedars of Lebanon Hospital. Other concerns include drug programs, environmental health, health manpower, prevention and health maintenance, HPC functions, and mental health. The number of votes recorded on each issue and sub-issue are noted. Minutes of the three meetings include a list of those attending, outlines of health services considered, discussion of current problems being encountered, and a discussion of goals. Specific staff assignments for the first six months of 1975 are contained in chapter four.

Comprehensive Health Planning Council of the Big Bend Area of Florida, Inc., Tallahassee.
Project Review Manual.
25p 1975 Available NTIS HRP-0003723

Project review procedures followed by the Big Bend Health Planning Council in evaluating proposals in the northwestern panhandle region of Florida are summarized for use by applicants in preparing proposals for review. Procedures described include early consultation, submission of application, sub - council project review, public hearing conducted by sub - council executive committee, findings of sub - council executive committee, final action by executive committee of the council, and notification of action. A schematic presentation of these steps is offered. Criteria for determining non - substantive and cursory review situations are set forth. Regulations and procedures for certificate of need (Section 1122) project review are described. Guidelines for determining area bed needs for acute medical - surgical facilities and nursing homes are presented. An outline of the review procedure involving the Prior Notification and Review System administered through State, regional, and metropolitan clearinghouses is presented. Review criteria relating to philosophy and need; manpower, facilities, and location; and finances are listed. A form for review and recommendations is included.

Coulton Mary R
Ralph K. Davies Medical Center - Franklin Hospital, San Francisco, Calif.
Labor Disputes: A Challenge to Nurse Staffing.
6p 1976 Available from Jnl. of Nursing Administration v4 n4 p15-20 May 76.

A nursing director's response to an overstaffing problem resultant from a physician boycott is described. In May 1975, anesthesiologists and other physicians sympathetic to their cause withdrew their services from a hospital in San Francisco, Calif. Elective surgery was curtailed, hospital admissions were decreased, and the patient census was reduced to 61 percent. The director of nursing took a step-by-step approach to solving the overstaffing situation in the nursing department. The steps were: defining overall needs, purposes, and goals; defining the problem; specifying the approach to the problem; stating behavioral objectives and performance criteria; listing alternative solutions; analyzing the alternatives; applying decision rules; controlling and implementing the decision; and evaluating the effectiveness of the solution. The solution chosen was to accept requests from nursing department employees for vacations, holidays, and absent days; to grant these requests on a daily basis, depending on patient census and nursing illness; and to retain centralized control. The contingency staffing plan proved successful in implementation, meeting requirements for adequate staffing and needs of employees. Details of the step-by-step problem solving approach are provided.

Curry Wesley
How Hospitals Are Controlling Costs.
Pub. in Hospitals, Jnl. of the American Hospital Association v50 n10 p64-67 16 May 76.

Cost containment activities among hospitals are described. One of the most fertile areas for containing costs is staffing. At Swedish Medical Center in Englewood, Colorado, staffing patterns are controlled centrally from the nursing offices, permitting the introduction of a fixed schedule that allows for flexibility in reacting to the staff's need for time off and freeing unit nurses from paperwork. Riverside Methodist Hospital in Columbus, Ohio established sick leave on insurance principles and specifically calls sick leave neither a right nor a benefit. Other staffing initiatives include: staffing each nursing unit so that only required levels of care are provided; using the 12 hour shift for nurses; using census forecasting to determine whether nursing personnel and operational beds should be increased; and instituting refresher courses for inactive registered nurses. Another area of cost containment receiving attention is

shared services. Some examples of shared services in U.S. hospitals are: shared purchasing activities; shared computer facilities; microfilming and teleconference networks; shared personnel services; and shared clinical services. Ambulatory care savings are affected through outpatient surgery and testing procedures. Energy conservation measures and budgeting procedures are also addressed.

Dartmouth Medical School, Hanover, N.H. Dept. of Community Medicine.
New Hampshire Data Manual for 1122 Review.
171p Jun 75 Available NTIS HRP-0009464

A data manual is described that was developed for use by New Hampshire in conducting 1122 reviews of health facility expenditures. Section 1122 of the Social Security Amendments (P.L. 92-603) requires that a State designated planning agency (DPA) be responsible for reviews of proposed health facility development programs. Because the DPA is a key element in the Federal reimbursement process and because it is essentially an arm of State government, New Hampshire as well as other States have considerable influence on how health care systems are developed. Coupled with a statewide plan for health care, the DPA is a significant factor in health care policy-making. Federal criteria for the review of health facility capital expenditures are presented, and two major considerations essential to effective health planning are noted: (1) population receiving services; and (2) facilities providing services. Concepts important in New Hampshire facilities review are outlined in relation to need determination, health facility program staffing and organizational structure, economic feasibility of program objectives, and efficiency and productivity requirements of a proposed health care facility. The following aspects of 1122 review are considered in the data manual: hospital service areas, demographic and socioeconomic characteristics, health status, manpower, and facility utilization and costs. Data items included in the manual were selected for their general relationship to the construction or expansion of hospitals and nursing homes.

East Central Alabama Areawide Health Planning Council, Montgomery.
East Central Alabama Areawide Health Plan. Edition Number Two.
134p 1975 Available NTIS HRP-0004241

A health plan for the 11 counties served by the East Central Alabama Health Planning Council is presented. The plan is based on a list of priorities developed by county health committees for county health profiles. The areawide priority

list includes 6 manpower priorities (additional physicians, dental service personnel, allied health manpower, registered nurses, environmental health manpower, and veterinarians); 25 health services priorities (e.g., health education for children and adults, coordinated emergency medical services, additional staff and financing for county health departments, expanded health services for school-age children, additional home health services); 5 mental health priorities (e.g., mental illness and retardation services); and 5 environmental health priorities (e.g., improved and expanded municipal and rural water systems and private supplies, improved sewage and solid waste disposal, nuisance abatement, vector control). The 1975 plan states goals and objectives in the areas of health manpower, emergency medical services, county health department services, health facilities, mental health, and environmental health, offers recommendations and describes implementation strategies. Throughout the plan, relevant data, descriptions of existing resources, and other supporting documentation are presented.

East Central Michigan Comprehensive Health Planning Council, Saginaw.
Comprehensive Study of Health Facilities and Service Needs. 1975. Saginaw, Michigan.
156p Jan 75 Available NTIS HRP-0004175

A study of health service and facility needs in the Saginaw, Michigan service area is presented. Following an introductory overview of the study, methods used in determining the hospital service area and service area population are presented, and utilization of inpatient services in the area is assessed. Acute care bed needs are presented by service, including bed needs for intensive care and coronary care. Methods by which use of inpatient service can be reduced are discussed, including methods requiring cooperation among providers and coordination of services (alternative delivery systems, increased use of ambulatory care and home care services, shared hospital services, utilization review, health insurance benefits structures) and institutional methods for reducing use of inpatient services (pre-admission testing programs, mechanical shortening of length of stay). Existing ambulatory, home care, mental health, and substance abuse services in the area are described. It is noted that no general medical outpatient service exists in the area, resulting in a high volume of non-emergency patients in hospital emergency rooms. A comprehensive medical outpatient service could serve to identify base problems (e.g., mental disturbance, alcoholism, etc.) which often go unrecognized and untreated in a specific incident-oriented emergency room situation. A similar assessment of long-term care services and facilities is presented, including a determination of long-term care bed

needs for Saginaw County. Health manpower considerations are limited to an analysis of medical staff of Saginaw hospitals and a discussion of the use of physician's assistants and extended - role registered nurses. Future trends in facility planning are outlined, and a summary of major recommendations is presented. Supporting tabular data, a list of persons interviewed in the course of the study, an explanation of determination of use rates, and other supporting documents are included in the appendices. Portions of this document are not fully legible.

Economic Development Association of Eastern Montana, Sidney.
Areawide Comprehensive Health Planning Agency.
Eastern Montana Areawide Health Plan.
236p May 75 Available NTIS HRP-0003414

This plan presents a view of health resources, goals, and objectives for a 17-county area of eastern Montana, along with strategies for its implementation. Economic and demographic characteristics of the sparsely populated region are provided, with projections of growth patterns to 1985. The health care system is described in terms of three major categories of manpower, facilities, and services. For each category, an inventory is made, and standards or goals are set. Needs based on these standards or goals are determined, and then long-term objectives are proposed through 1985. The services discussed include public health, emergency medical services, alcoholism and drug abuse care, and mental health services. Historical costs of nursing homes and hospitals in the region are discussed, and data indicating various modes of payment for health care services are examined. Potential developments of health maintenance organizations and national health insurance are also analyzed. Groups and agencies responsible for implementing objectives of the plan are identified. A multi-media community education program is being initiated to inform the public about the plan's objectives. Planning needs and goals are listed, and appendices are provided.

Elliot Jo Eleanor, Kearns Jeanne, Eds.
Western Interstate Commission on Higher Education, Boulder, Colo.
Analysis and Planning for Improved Distribution of Nursing Personnel and Services, Final Report.
1978 Available NTIS HRP-0900556

A final report of the activities carried out during the 30-month contract period. Reports on the State Model, Field Development and Pilot Testing of the State Model, National Model, Taxonomy Committee, Long Range Data Collection and Use, Regional Centers, Training, National Conferences, New

and Emerging Roles, and the Panel of Expert consultants. Includes a listing of all participants in the project.

Elliott Rebecca
Cleveland Area League for Nursing, Ohio. Nursing Needs Study Committee.
Study of Nurse Supply and Demand. Phase I.
31p Jan 74 Available NTIS HRP-0004048

Phase 1 of a comprehensive study undertaken in January 1972 by the Cleveland Area League for Nursing to determine and project the nurse supply and demand in Cuyahoga County, Ohio, is reported. Pre-collected data and questionnaires were utilized to determine employment patterns for registered nurses and licensed practical nurses in the County's hospitals, public health agencies, schools of nursing, and nursing homes. Phase I includes predictions of the demand for new nurses and of the potential shortage or surplus of nurses through 1977 in Cuyahoga County, and development of a model by which nursing needs can be estimated on a continuing basis. Following an introductory statement and brief definition of terms, the scope of the overall study is discussed, the objectives and approach used in Phase I are outlined, and data sources are identified. The forecasting model used in Phase I are explained in detail. Using the proposed model, projections are calculated for 1976 and 1977 and are set forth in tabular form. Study results indicate that in the next five years the area could experience a balance between the need for nurses and their availability, with only slight surpluses or shortages. It is suggested that educational emphasis, perhaps, should be shifted, to an extent, from the attraction of many new nurses to the upgrading of existing nurses. A bibliography and supporting calculations and tabular data are included.

Emerton Audrey C
South East Thames Regional Health Authority, London (England).
Reorganized National Health Service: Staffing Problems in Nursing.
Pub. in Royal Society of Health Jnl. v96 n2 p58-62 Apr 76.

The effects of past and predicted changes in Britain's National Health Service on the demand for and supply of nurses are discussed. The most significant effects are said to be those resulting from developments in medical technology; from changes in society and, consequently, in the demands of the public; and from changes in government policy and in the economy. It is predicted that in 1977 and 1978 major changes in the demand for nursing services will take place in the areas of child health, midwifery, incidence of acute illness, mental illness, mental handicaps, national and

regional specialties, and geriatrics. Statistics are cited evidencing a general increase of nursing staff employed in the National Health Service from 1965 through 1973. Statistics on nursing manpower supplies, nursing school dropouts and graduates, unemployment, and bed numbers are reviewed. It is concluded that, although the trends indicate an adequate supply of nursing staff, a challenge in balancing supply with demand will emerge in 1977 and 1978. The need to define the role of the nurse in every aspect of health care is noted, as is the need to apply such definitions in a national manpower planning effort. Educational needs of health professionals and of the public are stressed, as is the need to improve recruitment and selection techniques used by schools of nursing.

Feldman Janet, Hundert Mark
Rush - Presbyterian - St. Luke's Medical Center, Chicago, Ill.
Determining Nursing Policies by Use of the Nursing Home Simulation Model.
Pub. in Jnl. of Nursing Administration v7 n4 p35-41 Apr 77.

The use of a simulation model in evaluating alternative operating policies for a proposed long-term care facility is described. The proposed facility, a satellite agency of an urban university medical center, is being established to provide a wide range of health and social services for older long-term care patients. The nursing home simulation model is used to evaluate different systems of delivering care in the facility, the goal being to determine which set of operating policies will lead to the most efficient, effective nursing care. The model represents the operation of a nursing home by simulating the operation of individual nursing units and aggregating the results. The policy issues addressed in the planning of the proposed facility include staffing levels, scheduling of services, unit size, and prospective charge rates. The simulation model demonstrates that, to maximize the number of options available to residents and to maintain a reasonable cost of care, the nursing units should operate under a flexible schedule. The model shows that flexible operating policies will not be more expensive than rigid scheduling of services and that efficiency (utilization) and effectiveness (hours of nursing care applied) of the nursing personnel will be enhanced by flexible policies. The model is said to be a quick, easy method of evaluating and estimating the costs and benefits of proposed policies. Details of the model's input and output, a schematic representation of the model, and a discussion of its application in planning the proposed facility are included.

Fuller Mary E
University of Iowa Hospitals and Clinics, Iowa City.
Budget.
Pub. in Jnl. of Nursing Administration v6 n4 p36-38 May 76.

Guidelines for nursing care program budgets are offered in recognition of the need for nursing leaders to develop skills in financial planning. The nursing budget is a composite financial plan for all programs and services rendered by the nursing staff within a given fiscal period. The objectives of nursing care provide the framework for forecasting the financial requirements of the nursing care program. Although exact budgeting procedures may vary, the budget invariably is one of the nursing administrator's primary administrative responsibilities. The nursing administrator who designs her own budgeting procedures needs to make certain that the procedures result in a budget that is acceptable to the hospital or agency in terms of format and content. Well established policies and procedures simplify the preparation of the budget. The establishment of position controls, preferably arranged by cost centers, for all nursing department jobs is imperative. A cost center is a management unit for which separate cost accounting is maintained. Nursing personnel directly involved in practice provide estimates of projected budgetary needs. Nursing administration reviews and analyzes reports on its financial operation on an ongoing basis and shares information with the nursing staff. The budget is evaluated and revised as necessary by the nursing administration on the basis of available resources and program priorities.

Fulop Tamas
World Health Organization, Geneva (Switzerland). Div. of Health Manpower Development.
Manpower for National Health: Needs, Planning, Implementation.
Pub. in Impact of Science on Society v25 n3 p213-224 1975.

Suggestions for ways to make preventative and curative health care available at reasonable cost are made by a group of specialists in health manpower development from the World Health Organization (WHO). Health manpower requirements in any community are a function of the combined effect of the pattern of illness in a community, the type of organization the community chooses to serve its health needs, and the needs or demands of a community as perceived by its members. The availability of health manpower is affected by factors related to the supply of health workers and to the utilization of trained manpower. Supply factors pertain to the production of labor. The pattern of utilization includes: geographical and occupational distribution; career pattern and staff development; and the application of health

technology, internal and international mobility, licensure, and certification practices. Alternative methods used to project health manpower requirements are discussed. The availability of physicians and nurses in a community is examined, and alternative solutions for meeting health and health manpower needs are noted. Personnel associated with environmental health are considered. New strategies to plan and implement the production of health manpower are described. Problems associated with the delivery of health services and manpower development are explored.

Ganong Warren L, Ganong Joan M, Harrison Edwin T
Ganong (W. L.) Co., Chapel Hill, N.C.
Twelve-Hour Shift: Better Quality, Lower Cost.
Pub. in Jnl. of Nursing Administration v6 n2 p17-29 Feb 76.

A nurse staffing schedule with two 12-hour shifts, 7 days on and 7 days off, was studied at the Medical Park Hospital in Winston - Salem, North Carolina. One factor that enhanced the 12-hour nursing shift was the low turnover of nursing personnel in the hospital, particularly among registered and licensed practical nurses. The low turnover of professional nurses contributed to consistency in work performance and lower total financial costs to the hospital. With regard to stability, it was found that 18 of the 28 registered nurses, 9 of the 16 licensed practical nurses, and 16 of the 38 nurse assistants had over 24 months of continuous service. Work performance was influenced by the physical layout of nursing units. Visitor flow to the units was restricted and noise was kept at a minimum. Cost analysis showed that the two 12-hour shifts saved a significant number of nursing manhours per year when compared with the 8-hour shift arrangement. Consideration is given to the impact of scheduling and labor laws on the 12-hour shift schedule and to the attitudes of hospital personnel toward the 12-hour shift. It is concluded that better utilization of nursing personnel with the 12-hour shift resulted in lower staffing requirements and saved the hospital payroll expenses in excess of $41,000 annually. Nursing manhours for peak workload periods were not significantly affected. The payroll saving was calculated as $1.15 per patient day.

Gargantiel Carol W
Genesee Region Educational Alliance for Health Personnel, Inc., Rochester, N.Y.
Genesee Region Health Manpower Report: Graph Supplement.
117p 1 Jan 76 Available NTIS HRP-0007519

The January 1976 supplement to the Genesee Region Health Manpower Report is designed to show graphically the balance or imbalance between supply and demand for nursing and allied

health personnel in the 10-county Genesee Region of New York from 1973 to 1980. Forty-one sets of graphs based on statistics from 64 occupations are presented to aid in further interpretations of the original (March 1975) report. Each set of graphs shows the following information for the total Genesee Region: budgeted positions; employee turnover; graduates from area schools and training programs for 1973, 1974, and 1975, and the number of graduates projected for 1980; and employed persons and employment openings for 1974. For each subregion of the Genesee Region, budgeted positions for 1973-1980 and employed persons for 1974 are shown. For nursing occupations, the distribution of nursing aides and orderlies, licensed practical nurses, and registered nurses by types of agencies is given, and the distribution of registered nurses by occupational category is also shown. Graphs are presented in the occupational areas of administration; dietary and housekeeping; laboratory services; mental health, counseling, and social services; nursing; radiological services; rehabilitation services; special personnel; and special services.

Genesee Region Educational Alliance for Health Personnel, Inc., Rochester, N.Y.
Genesee Region Health Manpower Report.
407p Mar 75 Available NTIS HRP-0006408

Findings are reported of a 1974 survey of personnel employed in health care institutions in the ten-county Genesee Region of New York. Data on employed persons, budgeted positions, and employment openings are presented and analyzed for 150 occupations in: administration; dietary and housekeeping; laboratory services; mental health and counseling; nursing; radiologic services; rehabilitation services; social services; special personnel (e.g., optometrists, pharmacists, physicians' assistants; and special services (e.g., respiratory therapists, emergency medical technicians, operating room technicians). In addition to statistical analyses, the report provides information on demand for health personnel, an appraisal of potential supply through examination of regional health-related educational programs, and an estimate of future health manpower requirements. Brief reviews of national, regional, and local trends -- new education models, continuing education, ambulatory versus institutional care, national health insurance, government control, labor management, utilization review, normalization implementation, health career development -- are included, as are recommendations for research. The report provides details of survey methodology, supporting tabular data, a glossary of survey terminology, definitions of occupational titles by category, and a bibliography.

Gingras Pauline
Western Interstate Commission on Higher Education, Boulder, Colo.
National Conferences. Analysis and Planning for Improved Distribution of Nursing and Services.
92p Nov 76 Available NTIS HRP-0023109

Two national conferences were held as part of this project: the first to present the purposes and methods of the project and the preliminary findings, and the second to receive a final report, conclusions, and six position papers on major factors affecting the distribution of nursing personnel and services. The first conference is represented by the keynote address ('Planning for Nursing: An Old Need, A New Reality') and the concluding address ('Measuring Nursing Supply and Requirements: The State of the Arts'). Proceedings of the second conference include the keynote address about nurse legislation, summaries of the project activity and related DHEW Division of Nursing activities, six issue papers and related workshops, a roster of participants, and a 16-item annotated bibliography. The issues addressed were analytical approaches to planning for nursing personnel and services; nursing initiatives to improve the distribution of health care services; nurses and Health Systems Agencies: National, State, and regional planning; data issues in nursing; proposed policies, projects, and programs to improve the distribution of nursing personnel; and minority issues in nurse manpower planning. These conferences were elements of a project to strengthen, on a national scale, the nursing community's ability to analyze and plan for equitable distribution of nursing personnel and services.

Hershey J. C, Abernathy W. J, Baloff N
Stanford Univ., Calif. Graduate School of Business.
Comparison of Nurse Allocation Policies - A Monte Carlo Model.
33p Aug 72 Available NTIS HRP-0000690/8

A Monte Carlo model for nurse allocation and utilization is formulated to compare costs for fixed permanent staffing of nurses and controlled variable staffing which uses 'float' nurses in addition to a smaller permanent staff. This model is used to solve the problem for an example hospital of six wards; the analysis is carried out for 10 computer runs of 1,000 days each. In this case, 11.6% personnel hours are saved using variable staffing. The savings percentage is a function of a random variable representing the nursing school on a given day in a particular ward and the following eight parameters: the mean value of the random variable, its standard deviation, the fraction of days when the load exceeds the permanently assigned nursing hours for each allocation policy, an efficiency factor for 'float' vis-a-vis permanently assigned nurses, the minimum fraction of one day

that a float nurse must remain on a particular ward, and a correlation coefficient between pairs of wards where independence of load cannot be assumed. Six tables are appended which illustrate the sensitivity of savings to various parameters. (NTIS)

Lehman Merrill W, Friesen Quinton J
Methodist Hospital, St. Louis Park, Minn.
Centralized Control System Cuts Costs, Boosts Morale.
Pub. in Hospitals, Jnl. of the American Hospital Association v51 n10 p75,76,78,80 16 May 77.

When labor expenditures exceeded 60 percent of the entire operating budget at Methodist Hospital, St. Louis Park, Minn., the institution started an inhouse management engineering program. A staffing coordinator, who had a business background rather than a nursing background, was assigned to integrate the staffing program with recruitment, personnel, and admitting department functions. The staffing program was to be carried out in three distinct phases: long range planning, daily staffing planning, and evaluation reports. The long range planning process entails trend analysis, development of standards for each nurse's station, budgeting, recruitment, and monitoring the position control. Daily staffing requires a complex routine to ensure that adequate personnel have been assigned to meet patient care requirements. Centralizing control of and responsibility for the entire staffing function in the hands of the staffing coordinator resulted in better coordination and high morale for the nursing staff. Quality of patient care also improved when head nurses were relieved of staffing and scheduling problems and could devote more time to patients. Engineering work studies furnished a measurable basis for evaluating patient care requirements. Approximately $220,000 in nursing salaries was saved during the first year by making more effective use of staff through guidelines provided by management engineering. Administration found the resulting management information system to be of value.

Livengood Lindsay
Booz, Allen Methods Service, Inc., Los Angeles, Calif.
Planned Shifts Save Nurses and Dollars.
Pub. in Modern Hospital v104 n2 p101-104, 170 Feb 65.

A system for scheduling nursing shifts in an equitable manner is presented. Three steps for scheduling nursing duty effectively are defined: (1) determination of the actual workload for nursing personnel for each division and for each shift within the division; (2) development of a staff pattern to answer workload requirements; and (3) establishment of work schedules. Three basic scheduling arrangements exist

for continuous staffing: straight shift (each nurse or team working straight days, evenings, or nights); rotating shift (each nurse or team working one period on day shift followed by similar periods on the other two shifts); and alternating shift (each nurse or team alternating between two shifts). Methods are described for establishing schedules under each of the three shift plans, and sample plans are presented for cycles of 4 to 20 weeks. Three scheduling plans in which each nurse or team rotates among the three shifts are examined, and examples of scheduling patterns are provided. The discussion closes with a list of advantages that a hospital can offer its nurses through use of systematic scheduling techniques.

Marram Gwen
Massachusetts Univ. - Amherst. Div. of Nursing.
Comparative Costs of Operating a Team and Primary Nursing Unit.
Pub. in Jnl. of Nursing Administration v6 n4 p21-24 May 76.

A study was conducted to evaluate the comparative operating costs of a primary nursing unit and a team care unit in a 500-bed acute care hospital located in the metropolitan area of Boston, Mass. Both units were medical - surgical units and had approximately the same patient bed capacity. The costs of each unit were analyzed for the period between April 1974 and April 1975. Information was obtained through a questionnaire about sick, vacation, and overtime hours of unit staff members; the number of positions budgeted; the number of positions filled; and differential costs in inservice education and extrahospital-reimbursed education. Regular nursing hours on the primary unit totaled 17,882 over a 6-month period, while regular nursing hours on the team unit with fewer patients totaled 18,351. Costs for regular nursing hours on the primary and team units were $83,358 and $89,282, respectively. The primary care unit appeared to provide more individualized and patient-centered care and was more cost-effective than the team care unit. Nursing staff and patients on the primary care unit were highly satisfied, and staff members of the unit revealed a high level of professionalism. Nursing assessments on the primary care unit more often incorporated patient perceptions of illness, nursing needs were more frequently recorded, and nursing care plans were completed more often than on the team care unit. Total operating costs over a 6-month period were $113,581 for the primary care unit and $121,361 for the team care unit.

McCaffree Kenneth M, Winn Sharon, Bennett Carl A, Morrow Gloria, Crowley David
American Health Care Association, Washington, D.C.
Cost Data Reporting System for Nursing Home Care.
368p Mar 77 Available NTIS PB-264 910/1

A uniform cost finding and reporting system was developed for nursing home care based upon patient conditions and characteristics. Cost data collection instruments were developed, and tested in a variety of facilities to determine their acceptability to both administrators and State Medicaid agency personnel. Information on the conditions and characteristics of 1,615 residents in 12 facilities, and on how direct care employee time, and therefore costs, varied among these residents, was obtained and analyzed to determine which conditions and characteristics were cost related. The system was tested in 29 facilities to allow adjustments of costs on the basis of patient characteristics and system evaluation. Products of this research are consistent with provisions of P.L. 92-603, Section 249, and can be useful as guidelines for setting staffing standards and for establishing reimbursement rate differentials between classes and/or groups of residents. (NTIS)

Milliken Ralph A, Leszkiewicz John, Milliken Gary M
City Univ. of New York.
Obstetrics Facilities. Theoretic Model in New York City Borough.
Pub. in New York State Jnl. of Medicine, v75 n12 p2254-2257 Oct 75.

A theoretical model for redistribution, or conversion of obstetric facilities, now underutilized, and subsequently a fiscal burden to many hospitals, is discussed within the concept of regionalization. Guidelines regarding maternity bed occupancy rates are discussed, and the goal of closing physically old or small units that will then convert to nursing units is explained. To build a model that will overcome low utilization and will incorporate economies of scale will require that hospital data be reanalyzed toward regionalizing health resources. The Comprehensive Health Planning (CHP) agency of New York has been mandated to control program and facility construction in New York City. Each county has been divided into local planning districts. By accomplishing a regional analysis of obstetrics beds the number of maternity beds will be distributed within the appropriate CHP district. One of the aims of this theoretical plan is to increase the occupancy rate as significantly as possible to spread the fixed costs of physical facilities and staffing requirements more practically and thus alleviate costs of duplication. Statistically this favors the establishment of larger

services which would have a sufficient reserve of beds for a characteristically fluctuating census while yet maintaining a high enough daily average census to keep patient costs down. Regionalization of obstetric units has been shown to provide social and facility economies for both patients and physicians.

Nenner Victoria Corich, Curtis Edna M, Eckhoff Constance M
Scripps Memorial Hospital, La Jolla, Calif.
Primary Nursing.
Pub. in Supervisor Nurse v8 n5 p14-16 May 77.

There has been reticence on the part of many hospitals to adopt a primary nursing system because of anticipated cost increases. Primary nursing is seen as an alternative to a combination of functional and team nursing, which is an assembly line approach to patient care. Primary nursing is modeled after the case method type of nursing, which is still used in intensive care units. About five patients at one time are assigned to a nurse in primary nusing, and she is responsible for the total care of each patient from admission to discharge. The nursing service of Scripps Memorial Hospital in La Jolla, Calif., implemented a pilot project in primary nursing. The nurses were enthusiastic because of what they perceived as the professional approach to their work. Success of the pilot project brought on increase in primary nursing units to the hospital. The major challenge lay in replacing the nurses aides. When this was done through attrition and transfer, it was found that the hiring of registered nurses and licensed vocational nurses did not result in cost increases; higher staff salaries were offset by savings in eliminating the part-task system and time wasted in duplication of responsibility and communications. Patients were pleased with the care they received. Physicians noted that the psychological needs of patients were being met as a result of the bond between patient and nurse. Brief biographies of the authors, who work at Scripps, are presented.

O'Connor Thomas J, Efurd Nancy
Donald N. Sharp Memorial Community Hospital, San Diego, Calif.
System Predicts Patient Census, Forecasts Staffing Needs, Costs.
Pub. in Hospitals, Jnl. of the American Hospital Association v52 n6 p95-101 16 Mar 78.

A system that allows the Donald N. Sharp Memorial Community Hospital in San Diego, California, to respond with precision to changing patient workloads is reported. In recognition of economic factors and concerns, the hospital administration decided to establish a monitoring system to control

expenditures. All departments began to formally report their daily personnel costs per unit of service. A forecast committee was established to predict, on a weekly basis, activities for the following week. The purpose of this committee was to be aware of trends and adjust staffing patterns and other operating expenditures to the anticipated patient load. Procedures followed by the committee in trend analysis and forecasting techniques are detailed. The application of the forecasting system devised by the committee is detailed, and supporting data are tabulated. It is concluded that the system is simple and effective in developing a pattern of relationships between past hospital reservations and actual admissions for use in predicting future activities.

Petersdorf R. G
Health Manpower: Numbers, Distribution, Quality.
Pub. in Annals of Internal Medicine v82 n5 p694-701 May 75.

Reid Richard A
New Mexico Univ., Albuquerque.
Work Sampling Study of Midlevel Health Professionals in a Rural Medical Clinic.
Pub. in Medical Care v13 n3 p241-249 Mar 75.

A work sampling study is discussed which was initiated to provide a comprehensive description of the tasks performed by midlevel health personnel in the rural component of an experimental medical care delivery system. The study was undertaken to determine what policy changes were needed to improve operating economies to enable the operation to achieve fiscal viability. The investigation determined the proportion of time spent on various activities by the staff members (a family nurse practitioner, a laboratory aide, and a clerk-receptionist supervised by physicians at an urban medical center by means of telephone communications). More than 800 observations of the three staff members were recorded on ten randomly selected days. Work sampling results, summarized in tabular format, were considered within a comparative framework to qualitatively assess performance. Two alternative staffing configurations were designed as a result of the study, and shortly after completion of the study, the administration of the project was assumed by a private agency. Several decisions were implemented for the purpose of reducing overhead expenses, including the first alternative staffing configuration, and major policy modifications recommended in this study. It now appears that the delivery system is self-supporting.

Schneider Donald P, Foley William J
Rensselaer Polytechnic Inst., Troy, N.Y. School of Management.
Systems Analysis of the Impact of Physician Extenders on Medical Cost and Manpower Requirements.
Pub. in Medical Care v15 n4 p277-297 Apr 77.

A mathematical model of physician group practice is developed and applied to the analysis of health maintenance organizations (HMO's) using physician extender personnel. The model is based on a medical classification system incorporating the delegation of specific tasks to physician extenders. The medical care structure of the model shows how medical service demands are reflected in manpower requirements. The model also includes a comprehensive financial structure, taking into account payroll expenses, facility operation costs, patient visit and personnel overhead, costs of ancillary procedures, administrative and personnel overhead, other costs, capitation and patient visit revenues, and external revenues or grants. Results from field trials of the model in seven HMO's include an assessment of staffing without physician extenders versus staffing with extenders; a comparison of physician extender use in various clinic sizes, with implications for regional manpower planning; an analysis of minimum use of physician manpower; an assessment of physician extender use as a function of physician extender salary; and case studies in HMO planning. The field trial findings indicate that the model accurately represents the actual system and can be used effectively in cost and manpower analysis and in determining the types of patient visits best delegated to physician extenders.

Simborg Donald W
Johns Hopkins Hospital, Baltimore, Md. Dept. of Biomedical Engineering.
Rational Staffing of Hospital Nursing Service by Functional Activity Budgeting.
Pub. in Public Health Reports v91 n2 p118-121 Mar-Apr 76.

The measurement of the utilization of nursing services and the justification for monies spent on nursing services is discussed. It is concluded that the need for nursing services varies significantly from day to day in a hospital providing care for the acutely ill, and that nursing need does not necessarily correlate with the hospital's patient census. It is felt that a patient care classification system cannot determine nursing workload. A group of physicians and nurses at Johns Hopkins Hospital in Baltimore, Maryland, proposed a list of nursing activities that should be considered in budgeting for nursing staffing. The measurement of these activities was computerized based on

standard times needed to perform the various tasks. This approach separates quantifiable components of nursing care from arbitrary or nonquantifiable components. A dollar value is placed on each component of nursing services, and these sums can become the basis for budget justification. Functional activity budgeting also enables the utilization review of physicians' use of nursing services. This form of budgeting is only applicable if the major time components of nursing care -- those reflected in physicians' and nurses' orders -- are easily quantified, using a computer system.

Wilczynski Jerome B, Szczechowski W
Community Systems Foundation, Ann Arbor, Mich.
Evaluation of Nursing Services.
39p Oct 72 Available from Community Systems Foundation, 1130 Hill St., Ann Arbor, MI 48104.

The second phase of a study undertaken to assess and revise a hospital's procedures for determining nurse staffing requirements and allocating nursing personnel is documented. The report includes an outline of the study's objectives, recommended staffing patterns for the facility (by nursing unit, shift, and skill level), and a comparison of the recommended staffing levels with the levels in existence prior to the study. A cost comparison of the old and recommended staffing patterns shows an anticipated decrease of $162,442 per year as a result of implementing recommended changes. Staffing recommendations are also presented in regard to actual position assignments for each nursing unit and shift, preparation of cyclical schedules, requirements for full-time and part-time personnel, and vacations. A position control system for use in maintaining the proper number, mix of skill levels, and full-time / part-time balance for nursing personnel is described. Two management information systems -- an estimated earned hours report and a biweekly earned hours report -- developed to assist hospital administration and nursing management in the operation and control of the nursing service department are described. The results of a workload redistribution effort and a study of the clerical activities of the nursing office are also reported.

Wisconsin Dept. of Health and Social Services, Madison.
Management Improvement Fund Proposal. Demonstration of PERC System in Two Regions of Wisconsin.
9p Jun 76 Available NTIS HRP-0016325

A method is described for improving the management of nursing home patient evaluation in Wisconsin. Evaluation is accomplished through the patient evaluation review committee (PERC) plan to assess patient needs, assign staffing patterns

appropriate for needs, and reimburse in a manner consistent with staffing patterns. The PERC plan was formulated in 1973 in an attempt to correct deficiencies in the nursing homes of Wisconsin. Two tools were developed to assist in the implementation of PERC: (1) area of care evaluation (ACE) and (2) time unit base (TUB) system. The ACE form permits evaluators to categorize patients according to their total needs. The TUB system correlates the patient profile with services appropriate for a particular patient. ACE was tested in 40 homes with 3,136 patients, and activity data were collected from a subsample of 18 homes with 1,259 patients. Nineteen patient profiles were prepared. The PERC plan is shown to be an effective method for identifying specific areas of patient need, for determining appropriate staffing criteria, and for providing a means by which the Medicaid program can reimburse for specific service hours needed rather than reimbursing on a blanket coverage basis for services determined by negotiation. Wisconsin's Department of Health and Social Services plans to implement the PERC system in two regions of the State. Funding requirements for the system's implementation are presented in tabular form.

Wollard Douglas K
Lutheran Medical Center, Wheat Ridge, Colo.
Shared Service Organizes Its Own Nursing Pool.
Pub. in Hospitals, Jnl. of the American Hospital Association p83, 86, 89 16 May 76.

An on-call personnel program for member hospitals of the Midtown Hospital Association in Denver, Colorado is described as a useful alternative to commercial personnel services. The Midtown Hospital Association is composed of seven member hospitals. In February 1973, the association implemented a program to provide nursing personnel on an on-call or as-needed basis to its member hospitals. Under the program, nursing personnel are sent into member hospitals upon request to compensate for census peaks, vacations, and employee absenteeism. In the first 1.5 years of program operation, the association filled over 5,000 shifts with registered nurses, licensed practical nurses, nursing aides, speech pathologists, and occupational and physical therapists. Organization, utilization, orientation, and scheduling aspects of the association's on-call personnel program are detailed. The program has demonstrated that the on-call concept can be used by hospitals in a cost-effective manner to enable them to staff effectively during months of high utilization while not being overstaffed during low periods. The program has also attracted qualified nursing personnel back into the field on a part-time basis while allowing them to function as housewives, students, and mothers.

Yett Donald E
University of Southern California, Los Angeles.
Data Source Book for an Economic Analysis of Nurse Supply and Demand. Health Manpower References
459p Dec 74 Available NTIS PB-238 670/4

The publication contains statistical data that were assembled over a period of several years to study the economic aspects of the supply and demand for professional nurses. The data are presented in great detail and cover the period 1929-1970. They are arranged in three sections: employment in nursing and related occupations; salaries in nursing and related occupations; and annual hours worked. The data provide an historical data base for use by researchers, health economists, and health planners for many different types of nurse manpower analyses. Explanatory and bibliographic material accompany the data. (NTIS)

Yett Donald E
University of Southern California, Los Angeles.
Economic Analysis of the Nurse Shortage.
339p 1975 Available from D.C. Heath and Co., Dept. H.S., 125 Spring St., Lexington, Mass. 02173, $22.50.

A systematic economic analysis of the market for nurses is presented in this study. The first part of the book summarizes a literature survey on the shortage of nurses as found in hospital, nursing, public health, and related journals. It also demonstrates the general types of 'solutions' to this problem that have been proposed for more than 25 years. The difference between a manpower shortage relative to 'needs' criteria, and an economic shortage is described, including a consideration of three types of economic models of skilled manpower shortages. The data that could be collected and applied to these three models is summarized, with data presented by field within nursing. Trends in earnings and rates of return on training for nurses are compared to other workers, including all female workers, female college graduates, and other skilled female occupations (e.g., teachers). The data described above also is applied to each of the three economic models, and an eclectic model of the nurse market is developed. In turn, this model is used to analyze the major policy measures described earlier in the book. Specific attention is given to policies that might increase the short-run elasticity of nurse supply, the potential effects of expanding collective bargaining for nurses, the creation of more competitive market conditions through nurse registries, and the impact of Medicare, Medicaid and Federal nurse training legislation on increased nurse supply.

Zeqeer Louise Jimm
Kentucky Univ., Lexinqton. Coll. of Nursinq.
Calculatinq a Nurse Staffinq Budqet for a 20 Bed Unit at 100 Percent Occupancy.
Pub. in Jnl. of Nursinq Administration v7 n2 p11-14 Feb 77.

Detailed methods for calculatinq nurse staffinq needs are presented, considerinq personnel coverage for holidays, vacation, sick leave, and staff development time. A basic staffinq pattern and a personnel ratio on day, evening, and night shifts for a 20-bed unit at 100 percent occupancy are described and illustrated. The formula used to determine nursinq hours required per patient day is qiven. Procedures for calculatinq personnel requirements for a 40-hour week, absenteeism allowances, and frinqe benefits and staff development are presented in mathematical form. Personnel distribution is based on a ratio of six to five, professional (reqistered nurses) to nonprofessional staff (aides and orderlies). An abbreviated approach to calculatinq nurse staffinq needs is presented. Budqetary calculations in this approach are limited since they are predicated on the assumption that personnel will remain in a facility for a year. Absences due to deaths and unexcused absences are not covered. Coverage is based on the assumption that illnesses, vacation, holidays, and staff development are staggered throughout the year rather than occurrinq simultaneously.

VI. NEEDS AND REQUIREMENTS:

REGIONAL, STATE, AND NATIONAL STUDIES

American Nurses' Association, Kansas City, Mo. Statistics Dept.
Facts About Nursing 74-75.
242p 1976 Available from American Nurses' Association, 2420 Pershing Rd., Kansas City, Mo. 64108.

Statistics and information on nurses and nursing are presented in the 1970-71 edition of an American Nurses' Association periodic publication intended for use by health planners, researchers, and scholars. Tabular data and narrative summaries are presented on distribution of registered nurses, nursing education, the economic status of registered nurses, allied nursing personnel, and related information. The structure, functions, and purposes of several nursing organizations are also discussed. Specific topics for which statistics are provided include the following: nurse manpower, institutional nurses, public health nurses, nurse faculty members, Federal Government services, licensure for practice, and nursing associations. Nursing education data cover students, schools of nursing, registered nurse education, and financial assistance. Statistics are also presented on employment standards for registered nurses, employment conditions in hospitals and in public health nursing settings, hours and earnings of occupational health nurses, and Federal Government salary schedules. Information on allied nursing personnel concerns distribution of licensed practical nurses and allied personnel, practical nursing education, hours and earnings of allied nursing personnel, licensure for practice of practical nursing, and membership figures for the National Practical Nursing Association. Related statistics concern facilities and utilization, other health personnel, expenditures for health care, and vital statistics.

Arkansas State Health Planning and Development Agency, Little Rock. Health Manpower Planning Board.
Arkansas Health Manpower Resources, 1976. A Reference Document.
202p Nov 76 Available NTIS HRP-0016631

Health manpower resources in the State of Arkansas have been inventoried preparatory to the development of the State's

first health manpower plan. Information is presented about manpower resources in the following professions: physicians, dentists, dental hygienists and assistants, pharmacists, podiatrists, optometrists, nurses, nurse practitioners, physician assistants, physical and occupational therapists, medical technologists, medical laboratory technicians, supervisory and administrative personnel, clinical laboratory assistants, respiratory therapists, radiologic technologists, operating room technicians, dietitians, speech pathologists and audiologists, psychologists and psychological examiners, social workers, medical records personnel, chiropractors, veterinarians, emergency medical technicians, environmental sanitarians, lay midwives, and other health occupations and professions. For each classification, data are presented indicating the distribution by State in the mid-South Region, by Health Service Area, and by age and specialty; shortage areas are identified. Plans for development of a complete health manpower data base are described, and the type of information to be included in the proposed computerized system, together with identified data gaps, is delineated by profession. Additional information concerns credentialing in the health manpower field. Members of the State Health Manpower Planning Board and Staff of the Health Manpower Planning Project are listed.

Arkansas State Health Planning and Development Agency, Little Rock. Health Manpower Planning Board.
Health Manpower for Arkansas, 1976. A Comprehensive Health Manpower Study.
116p 1976 Available NTIS HRP-0016632

The results of a study of health manpower resources in the State of Arkansas are presented. A model for health manpower planning in Arkansas is described as that which incorporates supply, production, and demand information; future projections; criteria and standards; planning processes; and desirable products of planning. Health manpower resources in Arkansas as of 1970 are assessed, and supporting tabular data are provided. Consideration is given to the supply of physicians, dentists, nurses, pharmacists, and allied health professionals. The training programs for health manpower in Arkansas are detailed. Educational institutions are listed, as well as hospitals offering health occupation training courses. The support provided for health manpower education by the State of Arkansas is explored. The role of the Southern Regional Education Board in providing opportunities for Arkansas residents to receive education and training in health programs not offered within the State is examined. Consideration is given to the maldistribution of physicians, the area health education centers program, and continuing education for physicians. Trends affecting the U.S. health care system are reviewed. Manpower planning forecasts and

projections are made for the following health professionals in Arkansas: physicians, dentists, pharmacists, podiatrists, optometrists, veterinarians, registered nurses, licensed practical nurses, dietitians, and physical therapists. Priorities for the development of health manpower programs in Arkansas are identified, and activities of the Health Manpower Planning Board are described.

Concerns in the Acquisition and Allocation of Nursing Personnel.
Pub. in National League for Nursing Publications v20 n1709 pi-v, 1-49 1978.

Cultice James M, Cole Roger B
Bureau of Health Manpower, Rockville, Md. Manpower Analysis Branch.
Impact of Comprehensive National Health Insurance on Demand for Health Manpower.
61p Jul 76 Available NTIS HRP-0017885

The impact of the 1974 Comprehensive Health Insurance Plan (CHIP) on the demand for selected health services and health manpower requirements is explored. Health services included in the study were short-term hospitals, medical and dental office services, and pharmacy services. Increases in the demand for these services were estimated and translated into gross estimates for physician, dentist, registered nurse, pharmacist, and allied health manpower requirements. Baseline data for the study consisted of 1970 health service utilization rates by service category and population characteristic, population projections to 1976 according to these characteristics, measures of average coinsurance before CHIP, and the distribution of health manpower serving a particular health service area in 1970. The coinsurance rate was employed as the insurance plan variable, and the price elasticity of demand was used as the basic study parameter. The overall change in the demand for each health service area after CHIP was estimated using demand models. Hypotheses concerning supplementary insurance, in conjunction with CHIP, were tested in the models. It was found that the impact of CHIP on the demand for health care and resulting health manpower requirements would vary according to the type of service. A description of CHIP is provided, and the development and limitations of the study methodology are examined. Consideration is given to the possible shift from inpatient to outpatient services as a result of CHIP and to the impact of insurance deductibles. Supporting tabular and graphical data are included.

Doyle Timothy C, Cooper George E, Anderson Ronald G
Vector Research, Inc., Ann Arbor, Mich.
Impact of Health System Changes on the Nation's Requirements for Registered Nurses in 1985.
156p Dec 76 Available NTIS HRP-0018706

The impact of national health insurance (NHI), increased enrollment in health maintenance organizations (HMO's), and the reformulation of nursing roles on the demand for registered nurses was explored in this research project. The approach for determining nursing personnel requirements was based on an empirical model of the health system. National requirements for registered nurses were made for 1975 and projected for 1985 in relation to the 1972 base year. These requirements were categorized in terms of major employment settings: nonfederal short-term hospitals (both inpatient and outpatient units), physician offices, nursing homes, community health settings, HMO ambulatory clinics, other hospitals (Federal and long-term), nursing education, and private duty. Model estimates indicated that the impacts of both NHI and role reformulation are potentially much greater than the impact of any increase in HMO enrollment. The estimated growth in registered nurse requirements between 1972 and 1985 is approximately 145 percent. Appendixes contain personal information on the empirical model and its application and a list of references.

Doyle Timothy C, Anderson Ronald G, Cooper George E, Graulich Mark G
Vector Research, Inc., Ann Arbor, Mich.
Impact of Health System Changes on the 1985 Requirements for Registered Nurses by State.
157p Jun 77 Available NTIS HRP-0900505

The impact of health system changes on registered nurse requirements at the State level were investigated. Using a State registered nurse requirements model comprised of three modules (population, demand for services, and nurse requirements), the impact of the introduction of national health insurance, increased enrollment in health maintenance organizations, and the reformulation of nursing roles was assessed. Comparisons were made between requirements in the 1972 base year and estimated requirements in 1985. For individual States, projected 1985 requirements for registered nurses ranged from 112 to 190 percent of those in 1972. Projections for all but six States fell between 135 and 170 percent. An analysis of the combined impact of health system changes revealed that synergistic effects arise because of interactions among the changes. Most significant was the interaction between national health insurance and role reformulation. This interaction occurred because both national health insurance and role reformulation have

considerable effect on the same health care settings (short-term hospital inpatient and physician office settings) and because national health insurance is capable of producing significant changes in health service utilization. Supporting data on the findings of the investigation and information on the registered nurse requirements model are appended, as well as a list of references.

Emerton Audrey C
South East Thames Regional Health Authority, London (England).
Reorganized National Health Service: Staffing Problems in Nursing.
Pub. in Royal Society of Health Jnl. v96 n2 p58-62 Apr 76.

The effects of past and predicted changes in Britain's National Health Service on the demand for and supply of nurses are discussed. The most significant effects are said to be those resulting from developments in medical technology; from changes in society and, consequently, in the demands of the public; and from changes in government policy and in the economy. It is predicted that in 1977 and 1978 major changes in the demand for nursing services will take place in the areas of child health, midwifery, incidence of acute illness, mental illness, mental handicaps, national and regional specialties, and geriatrics. Statistics are cited evidencing a general increase of nursing staff employed in the National Health Service from 1965 through 1973. Statistics on nursing manpower supplies, nursing school dropouts and graduates, unemployment, and bed numbers are reviewed. It is concluded that, although the trends indicate an adequate supply of nursing staff, a challenge in balancing supply with demand will emerge in 1977 and 1978. The need to define the role of the nurse in every aspect of health care is noted, as is the need to apply such definitions in a national manpower planning effort. Educational needs of health professionals and of the public are stressed, as is the need to improve recruitment and selection techniques used by schools of nursing.

Gingras Pauline
Western Interstate Commission for Higher Education, Boulder, Colo.
Regional Centers. Final Rept. Analysis and Planning for Improved Distribution of Nursing Services.
125p Feb 77 Available NTIS HRP-0017900

The activities of regional centers participating as subcontractors in a nationwide project aimed at strengthening the nursing community's ability to analyze and plan for improved distribution of personnel and services are reported. The major objectives of the 18-month project included:

developing State and national models for projecting nursing requirements and resources; planning for improved data collection to support analysis and planning of nurse manpower; supporting demonstration projects and regional centers; compiling an inventory of innovative approaches to improving the distribution of nursing skills and services; training nurse leaders in the use of analytical techniques; and conducting national conferences. The regional centers focused their activities on strengthening communication networks within and among the States. The centers also participated in and conducted short-term training programs, provided liaison with the national project staff, and facilitated distribution of information about the project. Reports on these and other activities carried out in the project's midwestern, New England, southern, and western regional centers are accompanied by supporting materials and an annotated bibliography of project publications and reports.

Goronzy Daniel W, Smith Gordon C
Saint Joseph Hospital, Chicago, Ill.
Area Health Education Center Eases Manpower Maldistribution.
Pub. in Hospitals, Jnl. of the American Hospital Association v50 p109,110,112-114 16 Mar 76.

The Southeast Tennessee Area Health Education Center (SETAHEC), was formed to insure input from all groups involved in the delivery of health care and in procuring manpower services in 10 counties in Tennessee and 3 counties in Georgia. Although the center's financial resources were limited, its initial efforts were directed toward physician training. SETAHEC aided in the establishment of a clinical education center that administers training programs and continuing medical education courses and performs related educational services under contract with the University of Tennessee. The center made arrangements with a number of universities in the area to provide preceptorship training for primary care physician's assistants. A nurse training program with built-in career mobility was established under the auspices of SETAHEC. The center is also developing a core curriculum with multiple tracks for other allied health careers. Planning tools used by the center include a profile of the community served, a profile of the health care delivery system, an index of health manpower resources, and an index of health education programs. Suggested additional areas for SETAHEC involvement are a manpower plan and personnel registry, placement and recruitment, technical assistance to schools, research, continuing education, and consumer education. Planned components of the facility are described.

Gray Robert, Sauer Ken, Smith Mark
Western Interstate Commission on Higher Education, Boulder, Colo.
Nursing Resources and Requirements: A Guide for State-level Planning. Analysis and Planning for Improved Distribution of Nursing Personnel and Services.
1978 Available NTIS HRP-0900588

Written to assist state-level decision makers in nursing, health planning, and higher education communities, the Guide begins with a theoretical discussion of the important aspects of planning for nursing resources and requirements at state and substate levels. It then explains how recent information about nursing and related health care factors may be used to reach specific conclusions regarding issues raised in the theoretical discussion. Finally, the Guide describes mathematical procedures that may be used to project nursing resources and requirements over a one- to five-year period, given a particular set of user-specified assumptions.

Grigorieff Paul
Abt Associates, Inc., Cambridge, Mass.
Site Visit Report for the Minnesota Area Health Education Center Program.
82p Nov 75 Available NTIS PB-254 701/6

The Minnesota Area Health Education Center (AHEC) project is one of eleven Bureau of Health Manpower (HRA - DHEW) supported projects which were established to improve the geographic and speciality distribution of health personnel. This report describes the development, organization and activity of the AHEC as well as project antecedents; contextual information; quantitative data on the distribution of project expenditures and characteristics of education activities i.e., medicine, dentistry, nursing, allied health, etc., conducted through the first three years of the project's five year contract term. This report also discusses the major problems encountered and early achievements of the Minnesota AHEC. (NTIS)

Grigorieff Paul
Abt Associates, Inc., Cambridge, Mass.
Site Visit Report for the California Area Health Education Center Program.
94p Nov 75 Available NTIS PB-254 698/4

The California Area Health Education Center (AHEC) project is one of eleven Bureau of Health Manpower (HRA - DHEW) supported projects which were established to improve the geographic and speciality distribution of health personnel. This report describes the development, organization and

activity of the AHEC as well as project antecedents; contextual information; quantitative data on the distribution of project expenditures and characteristics of education activities i.e., medicine, dentistry, nursing, allied health, etc., conducted through the first three years of the project's five year contract term. This report also discusses the major problems encountered and early achievements of the California AHEC. (NTIS)

Grigorieff Paul
Abt Associates, Inc., Cambridge, Mass.
Site Visit Report for the Tufts/Maine Area Health Education Center Program.
51p Nov 75 Available NTIS PB-254 700/8

The Tufts/Maine Area Health Education Center (AHEC) project is one of eleven Bureau of Health Manpower (HRA - DHEW) supported projects which were established to improve the geographic and speciality distribution of health personnel. This report describes the development, organization and activity of the AHEC as well as project antecedents; contextual information; quantitative data on the distribution of project expenditures and characteristics of education activities i.e., medicine, dentistry, nursing, allied health, etc., conducted through the first three years of the project's five year contract term. This report also discusses the major problems encountered and early achievements of the Tufts/Maine AHEC. (NTIS)

Grigorieff Paul, Kell Diane
Abt Associates, Inc., Cambridge, Mass.
Site Visit Report for the Illinois Area Health Education Center Program.
110p Jan 76 Available NTIS PB-254 699/2

The Illinois Area Health Education Center (AHEC) project is one of eleven Bureau of Health Manpower (HRA - DHEW) supported projects which were established to improve the geographic and speciality distribution of health personnel. This report describes the development, organization and activity of the AHEC as well as project antecedents; contextual information; quantitative data on the distribution of project expenditures and characteristics of education activities i.e., medicine, dentistry, nursing, allied health, etc., conducted through the first three years of the project's five year contract term. This report also discusses the major problems encountered and early achievements of the Illinois AHEC. (NTIS)

Grigorieff Paul
Abt Associates, Inc., Cambridge, Mass.
Site Visit Report for the West Virginia Area Health Education Center Program.
42p Nov 75 Available NTIS PB-254 708/1

The West Virginia Area Health Education Center (AHEC) project is one of eleven Bureau of Health Manpower (HRA - DHEW) supported projects which were established to improve the geographic and speciality distribution of health personnel. This report describes the development, organization and activity of the AHEC as well as project antecedents; contextual information; quantitative data on the distribution of project expenditures and characteristics of education activities i.e., medicine, dentistry, nursing, allied health, etc., conducted through the first three years of the project's five year contract term. This report also discusses the major problems encountered and early achievements of the West Virginia AHEC. (NTIS)

Hathaway Ann
Abt Associates, Inc., Cambridge, Mass.
Site Visit Report for the Texas Area Health Education Center Program.
70p Nov 75 Available NTIS PB-254 707/3

The Texas Area Health Education Center (AHEC) project is one of eleven Bureau of Health Manpower (HRA - DHEW) supported projects which were established to improve the geographic and speciality distribution of health personnel. This report describes the development, organization and activity of the AHEC as well as project antecedents; contextual information; quantitative data on the distribution of project expenditures and characteristics of education activities i.e., medicine, dentistry, nursing, allied health, etc., conducted through the first three years of the project's five year contract term. This report also discusses the major problems encountered and early achievements of the Texas AHEC. (NTIS)

Health and Hospital Planning Council of Northeastern Pennsylvania, Avoca.
Adult Long-Term Care.
14p 1974 Available NTIS HRP-0004274

Guidelines for the development and evaluation of adult long-term care services in the six-county region served by the Health and Hospital Planning Council of Northeastern Pennsylvania are presented. Health status, health resources, and population characteristics of the area are summarized. A method of dividing the long-term care services spectrum on the basis of a range of related qualities is presented.

Services are divided into categories of inpatient congregate care (nursing homes as geriatric centers), outpatient services, and outreach services such as home health aides, meals-on-wheels, etc. It is noted that adult long-term care should be directed toward the support and maintenance of the individual in an independent setting and to the provision of needed health and social services to maintain the maximum level of individual independence and functioning in the community. A formula for determining nursing home bed needs in the area is presented. Qualitative standards to be used in evaluating proposed programs for adult long-term care are set forth in the areas of construction, equipment, and staffing; quality assurance; appropriate placement; financing; and continuity of health-social services. Development of a community-based continuum of health and social services throughout the region is recommended; a minimum service complex for such a system is described. A bibliography is included.

Health Planning Council for Central North Carolina, Durham.
Regional Health Plan. Region 'J', 1974-1975.
172p 1975 Available NTIS HRP-0004337

A regional health plan is presented for six central North Carolina counties comprising both urban and rural populations. Several paradoxes are said to characterize the region: two of the three medical schools in the State are in the region, yet health scarcity areas are identified within 10 miles of these campuses; some of the counties recorded average income levels comparable to the national level, yet within the region there are large rural population groups unable to pay for their health care; more than 200 registered nurses are graduated annually from schools in the region, while one area hospital finds it necessary to recruit registered nurses from as far away as Africa and the Philippines; although parts of the region boast some of the highest physician / population ratios in the nation, others experience a non-white infant mortality rate three times the overall national rate. The Black population ranges from 33 percent in Durham County to 17 percent in Orange County. Following an outline of goals and guidelines for the local health system, an area description (population, economy, health indicators, and resources, etc.) is provided. Objectives and implementation strategies are set forth in nine planning areas: hospitals, long-term care services, emergency medical services, primary health care, mental health, health education, environmental health, health economics, and health manpower. A general policy statement is included for each planning area. Appendices present supporting tabular data, including hospital and long-term care facility inventories, utilization data, and bed need estimates. Portions of this document are not fully legible.

Health Planning Council of the Jacksonville Area, Inc., Fla.
Brief Overview of the Health Manpower Situation in Northeast Florida.
17p May 75 Available NTIS HRP-0004489

A survey of the health manpower situation in hospitals of the six-county planning region served by Health Planning Council of the Jacksonville (Florida) Area, Inc., is reported. Ten health personnel categories were surveyed through a questionnaire sent to area hospitals; in addition to determining hospital demand for manpower, the study provides an overview of training opportunities in the area for the job classifications surveyed. The following categories of personnel were surveyed: registered nurses, licensed practical nurses, aides / orderlies, operating room technicians, medical technologists, radiologic technicians, respiratory therapists / technicians, ward / unit clerks, medical secretaries / transcriptionists, and laboratory technicians / assistants. Observations and conclusions are presented regarding the adequacy of supply and training opportunities for each category. Tables present hospital employment and vacancy figures for each job classification, a list of area training facilities and the numbers of graduates, and a breakdown of registered nurse vacancies in Jacksonville area hospitals by degree requirement, i.e., baccalaureate / masters or associate / diploma. A copy of the survey instrument is included.

Health Planning Council, Inc., Madison, Wis. Health Manpower-Nursing Committee.
Planning to Meet the Future Need for Nurses in South-Central Wisconsin.
30p Mar 70 Available NTIS HRP-0003617

The future need for nursing services in south central Wisconsin and the potential ability of the area to meet that need are assessed. A literature review and an evaluation of resources, activities, and future directions of nursing education programs in the area were undertaken. Various levels of nursing are defined, and trends in function of nurses are discussed. Resources for educating nurses in the area are described. The following recommendations are made: graduation annually of 150 additional registered nurses by existing schools in the area; development of clinical facilities to increase the number of practical nurse graduates; expansion of recruitment efforts aimed at men as well as women; establishment of an associate degree program in Madison, Wisconsin; development of day, evening, and weekend class schedules to assist nurses in completing degree requirements; provision of career development opportunities for nurses; and education of nurses to extend independent functions. These and other recommendations relate to

increasing the supply of nurses; future planning for basic nursing education; planning for graduate, continuing, and inservice education; financing nursing education; and the need for more extensive examination of future requirements for health manpower.

Human Services Administrative Systems, Denver, Colo.
Analysis and Inventory of Health Resources in Colorado Planning and Management District 6.
104p Oct 74 Available NTIS HRP-0003449

This report presents the results and an analysis of a study designed to examine available health resources in a six-county area in Colorado. Comments and recommendations based on the study findings are included. Health facilities, agencies, and professional societies were visited and given questionnaires to complete. The first section of the report presents findings and analyses in the areas of public health, manpower recruitment, education and training, facilities, noninstitutional services, and the area's comprehensive health planning organization. A description of services or resources provided by each area is made, and recommendations for development are discussed. The second section includes copies of the questionnaires completed by hospitals and nursing homes and displays the collected information in matrix tables. This information concerns such factors as accreditation, staffing, equipment, distribution of beds by service, and the utilization of beds and services. Appendices provide a regional comparison of selected health resources per 1,000 population and staff rosters for area hospitals. Portions of this document are not fully legible.

International Standards for Employment and Conditions of Work and Life of Nursing Personnel.
Pub. in Nursing Jnl. of India v69 n3 p57-67 Mar 78.

Iowa Regional Medical Program, Oakdale.
Study of Potential Satellite Clinic Sites in the Maquoketa Area.
44p 1 Mar 75 Available NTIS HRP-0018173

A study was undertaken in the rural Maquoketa area of Iowa to determine the best sites for satellite clinics for a six-man group practice. Seven communities in the Maquoketa area were evaluated as potential sites, recommendations were drawn, and possible operational arrangements were considered. Each site was evaluated on the basis of availability of medical resources, estimated patient volume, potential financial success, and community acceptance of a satellite arrangement. The sites were also considered in terms of their distance

from and social and economic alliance to the central community in which the group practice is located and to other communities. Communities which already had active practicing physicians or which showed strong orientation to community or area health centers other than Maquoketa were eliminated from consideration, and the remaining five communities were ranked according to their scores on factors of proximity to physician services, township population, 1960-1970 population change, population age composition, family income distribution, and projected utilization. Guidelines for operating the satellites touch on facility requirements, staffing, operating hours, and services. Use of physician extenders is recommended. Supporting data are included.

Jakubauskas Edward B
Iowa State Univ., Ames. Industrial Relations Center.
Comprehensive Health Manpower Planning: Demonstration of Research - Conference Procedures for Estimating Health Manpower Requirements and in Evaluating Educational and Training Programs for Selected Health Occupations in Non-Metropolitan Areas.
102p 31 May 68 Available NTIS HRP-0002078

A project was undertaken to explore the feasibility of developing a comprehensive system for health manpower planning in Iowa that would involve educators, leaders in health occupations, State officials, and university research personnel. The initial phase of the pilot study consisted of developing a structure for estimating health manpower requirements through short-term and long-term procedures and in conducting and publishing studies on working conditions and attitudes of health personnel in selected occupations. Working papers for a Health Manpower Conference were prepared on national, State, and regional health manpower requirements and specifically on manpower requirements in Iowa for services in clinical laboratory areas, dentistry and related areas, dietetic and nutrition areas, environmental health, medical records and library services, nurses and related personnel, rehabilitation, radiology, visual services and eye care, and pharmacy. Project findings underline the necessity for the continued establishment of additional health occupations education programs according to a need for supportive health workers; improvement of communications on all levels; improvement of the coordination of activities of major health and health related organizations in the State of Iowa; and establishment of a central information and education agency. Appendices provide information on resource personnel for the study and Conference participants, working papers, and reports. Charts detail the organization of the pilot study, suggested organization and flow for a health manpower data bank center, and a model health planning and coordinating system.

Jones D. C, Cooley P. C, Miedema A, Hartwell T. D
Public Health Service, Bethesda, Md. Div. of Nursing.
Trends in Registered Nurse Supply. Health Manpower References.
119p Mar 76 Available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 as 017-041-00097-5.

Trends in the supply of nurses are reviewed in relation to nursing needs and planning for effective health manpower in a study sponsored by the Division of Nursing, Public Health Service, DHEW. The focus of the study was twofold: provide projections of nurse supply and develop a practical projection methodology that can be routinely utilized over time. The type of projection methodology developed in the study consists of a model that uses periodically collected national data and procedures that update the values of model parameters as more recent data become available. In 1972, there were approximately 1.4 million persons suitably trained for becoming a registered nurse. Of these, about 1.1 million were licensed and 0.8 million were active. The number of students graduating from U.S. schools of nursing increased by 36 percent between 1970 and 1973. The percentage of applicants that passed their registered nurse licensing examination the first time decreased from 85.8 in 1965 to 81.8 in 1972. The percentage of those who retook the examination and passed also decreased from 63.3 in 1965 to 52.5 in 1972. The proportion of foreign nurses obtaining their first license in the U.S. between 1962 and 1972 fluctuated between 7 and 17 percent of all first time licenses issued and contributed significantly to the increase in the licensed stock of registered nurses. Variables influencing the decision of married nurses to participate in the labor force and the extent to which they participate are noted. Consideration is also given to wage rate, ethnic, and geographic location trends in the supply of nurses. The labor force participation behavior of single nurses is discussed. Details on the projection model are provided, the model being based on the licensed stock of nurses and the flow of nurses into and out of this licensed stock resource pool. The supply of registered nurses is estimated by multiplying the stock of licensed nurses by the proportion of licensed nurses that are actively employed. In checking the model, January 1972 estimates of nurse supply were made using data from the 1966 inventory of registered nurses compiled by the American Nurses' Association and from annual licensure data. A list of references is provided.

Keaveny T. J, Hayden R. L
Manpower Planning for Nurse Personnel.
Pub. in American Jnl. of Public Health v68 n7 p656-661 Jul 78.

A technique is described which can be applied to manpower planning for nurse personnel at a state or regional level. An iterative process explores the implications of alternative planning policy decision strategies intended to balance manpower supply and requirements. Impacts of the following policy alternatives are estimated: scale of operations of education institutions; interstate migration patterns; labor force participation rates; and job design of licensed practical nurse (LPN) and registered nurse (RN) positions.

Kell Diane
Abt Associates, Inc., Cambridge, Mass.
Site Visit Report for the South Carolina Area Health Education Center Program.
81p Nov 75 Available NTIS PB-254 706/5

The South Carolina Area Health Education Center (AHEC) project is one of eleven Bureau of Health Manpower (HRA - DHEW) supported projects which were established to improve the geographic and speciality distribution of health personnel. This report describes the development, organization and activity of the AHEC as well as project antecedents; contextual information; quantitative data on the distribution of project expenditures and characteristics of education activities i.e., medicine, dentistry, nursing, allied health, etc., conducted through the first three years of the project's five year contract term. This report also discusses the major problems encountered and early achievements of the South Carolina AHEC. (NTIS)

Kitsap County Comprehensive Health Planning Council, Bremerton, Wash.
How to Plan for Selected Health Care Areas: An Approach for Kitsap County. Volume I: The Model.
119p Jun 75 Available NTIS HRP-0010847

A model for the development of plans for manpower, facilities, public health, and special programs in Kitsap County, Washington is provided. Sources of available data for the population are listed, and tabular data are presented for vital statistics and morbidity. The data needed for planning for manpower, facilities, and public health programs are outlined, and a list of data sources and a discussion of the limitations or gaps in these data are included. Recommendations concerning which sources of data to use are offered. Methods useful in assessing health needs, analyzing information, and making future projections are suggested.

Projections about future health needs and future health care utilization are formulated. Health manpower information is provided, primarily about physicians and registered nurses. The health care facilities examined are hospitals and nursing homes, and the public health programs discussed include public and school health services and emergency substations. A 1974 inventory of services and facilities is presented, and manpower and predictive tables showing 1980 and 1985 requirements for manpower, facilities, and certain public health services are included. An inventory of funding sources in the county is provided, and a bibliography is appended.

Kodadek Sheila
Western Interstate Commission for Higher Education, Boulder, Colo.
Inventory of Innovations in Nursing. Analysis and Planning for Improved Distribution of Nursing Personnel and Services. 149p Nov 76 Available NTIS HRP-0023110

In response to letters requesting information and other publicity activities, descriptions of 159 examples were submitted of nurses in new and emerging roles, practice sites, and payment mechanisms. The examples include educational programs that prepare nurses for new roles and settings and descriptions of the new roles. Capabilities commonly identified as practitioner skills (e.g., physical and psychosocial assessment, diagnosis, treatment) are described in 89 of the 159 projects. The practice settings range from independent nursing practices to hospital outpatient departments. Counseling, health teaching, and prevention are commonly given as primary concerns. The 20 community clinics describe examples of nurses who have found ways to improve access to and quality of health care, generally for clients who are geographically and/or socioeconomically isolated from the mainstream of health care delivery. Nurses' activities in 28 community health agencies and 3 specialized health organizations are portrayed. Inpatient programs in hospitals and nursing homes account for 24 programs, with another 6 programs offering ambulatory or outreach services. Other types of projects include home health care agencies (6), school health programs (8), education programs (42), independent nursing practices (10), and physician's offices (5). Seven demonstration projects are documented and analyzed for cost effectiveness. Financial reimbursement emerges as a recurring problem when physicians are not part of the formal structure. Other barriers include tradition - bound institutions, the need for outside funding, an illness orientation, and preconceived ideas about the nursing role in health care.

Kunstel Frank
Assessing Community Needs: Implications for Curriculum and Staff Development in Health Education.
Pub. in Jnl. of School Health v48 n4 p220-224 Apr 78.

Levine Eugene
Public Health Service, Bethesda, Md. Div. of Nursing.
Nurse Manpower Yesterday, Today, and Tomorrow.
Pub. in American Jnl. of Nursing v69 n2 p290-296 Feb 69

Characteristics of health manpower in the 1950's, forces that have influenced nursing since then, and trends for nursing in the 1980's are discussed. In the 1950's nursing was the largest health manpower field, characterized by uneven geographic distribution, and hospital domination of employment and nursing education. A nursing manpower shortage became acute, but nursing salaries remained low, turnover rates were high, only 40 percent of the trained nurses were employed in nursing, and little interest was expressed in advanced education or opportunities for registered nurses. Nurse manpower planning was isolated from the mainstream of socioeconomic forces and changes. Recently, however, changes have begun to occur. Federal legislation has had a substantial impact on nurse demand and supply. Advances in biomedical science have expanded the role of nurses, as have new programs of community mental health centers and rehabilitative care. Changes in the organization and delivery of health services have involved nurses in every step, particularly with the development of trends toward progressive patient care. Reports of health manpower commissions and expanded Federal support for nursing programs have had an impact on nursing careers; recommendations, aimed at making nursing more attractive, encourage increased levels of professional responsibilities, improved salaries, more flexible hours for married women, and better retirement provisions. Nursing education is shifting from hospitals to colleges and universities, and there is a growing interest in continuing and advanced education. It is apparent that the demand for nurses will continue upward, new roles will be established, and nursing will become more intellectually challenging, more learned and scientific.

Linkous C. Ted, Phelan Lee P, Moffett Thomas, Cetrulo Mary Frances
Southeastern Ohio Health Planning Association, Cambridge.
Phase One - Health Plan, 1975.
74p 1975 Available NTIS HRP-0003684

Phase one of an areawide health plan for 11 counties of southeastern Ohio is presented. Socio-economic and health profiles of the area are included, together with a

delineation of areawide needs, goals, and objectives, hospital acute bed needs, and nursing home bed needs. The area studied is predominantly rural; eonomic development has been stimulated by the recent emphasis on coal production. Tables are used to display population and health status data. A health attitudes survey, undertaken in early 1972 with a 38 percent response rate from 400 mailed questionnaires, is described. Goals are presented in eight priority areas: primary health care, manpower, emergency medical services, nursing homes, education and communications, care for the elderly, preventive care, and mental health. A synopsis of the overall framework for plan development is presented and includes five major areas: facilities, services, manpower, education and communications, and preventive care. Methodology employed in developing bed need estimates is described in detail. In the course of this study, it was found that many residents of the planning area were unaware of available services and did not have an entry point into the health care system. Certain intrinsic problems in the area -- below average income, scattered population, rough topography, improper water and sewage facilities -- are barriers to effective health care. A bibliography and survey instrument are included. Data are presented through 21 tables and five illustrations.

Lum Jean, Leonhard Gregory
Western Interstate Commission for Higher Education, Boulder, Colo.
Panel of Expert Consultants: Final Report. Analysis and Planning for Improved Distribution of Nursing Personnel and Services.
1978 Available NTIS HRP-0900555

This manual facilitates the generation of a range of resources projections for nursing personnel based on the assumptions worksheets, mathematical equations and procedures described in 'Nursing Resources and Requirements--A Guide for State-Level Planning: Analysis and Planning for Improved Distribution of Nursing Personnel and Services.' The Manual is a technical document which provides the necessary information and instructions for entering the resources assumptions into the software to produce sets of projections. This publication is intended for persons with some knowledge of computing systems.

McCarthy Cathy, Pelofsky Brenda
Mid-America Comprehensive Health Planning Agency, Kansas City, Mo.
Long-Term Care Plan.
96p Apr 75 Available NTIS HRP-0010347

A long term health care plan was developed by the Mid-America Comprehensive Health Planning Agency in Kansas City, Missouri. Objectives of the plan are as follows: (1) determine both the size and geographic distribution of demand for given levels of care in 1974 and to project demand to 1980; (2) describe existing long term care resources in terms of location, bed capacity, operating rates, costs, manpower availability, and scope of services offered; (3) establish standards for the delivery of services; and (4) examine relationships among demand, available resources, and resource standards in order to develop guidelines for a delivery system that will optimize the quality, accessibility, and cost-effectiveness of long term care services. To accomplish these objectives, data on the characteristics of residents in long term care institutions were collected and assembled to identify demographic variables affecting use. A facility inventory was undertaken to gauge the extent and nature of resource availability, and a consumer / provider task force was convened to assist in the development of service standards and to offer input regarding study analysis. Resources are examined in the plan with regard to the role of nursing homes, services, staffing, and manpower. Data on demand and projected bed needs are provided; the bed needs are classified by level of care. Appendices contain additional information on data collection procedures and forms and the availability of long term care services and facilities in the study area.

McCullough D. M
Nursing Manpower Planning.
Pub. in World of Irish Nursing v6 n1 p6-7 Jan 77.

Meyer Randall W
Missouri Nurses' Association, Jefferson City. Missouri Nurses' Survey.
Missouri Nurses Survey: A Statewide Survey of Professional Nursing Supply and Needs, 1975.
144p Sep 75 Available NTIS HRP-0008264

A study of statewide professional nursing supply and needs is reported by the Missouri Nurses' Association. Data were obtained from a review of the literature and surveys of health care institutions and agencies employing registered nurses (RNs), all Missouri schools of nursing, and a 20 percent sample of licensed RNs in Missouri. Data are

presented detailing the institutional characteristics and employment practices and needs of health care institutions and agencies which employ RNs. RN positions, salaries, inservice training, continuing education, budgeted and unfilled positions, and educational levels in these institutions and agencies are detailed in tabular form. The individual characteristics of Missouri nurses are described, including educational preparation, marital status, age, employment settings, hours worked, and salary. An inventory of the types, curriculum, size, and location of schools of nursing is provided. This inventory includes basic preparation programs, continuing education activities, and postgraduate degree programs; it discusses student admissions, withdrawals, and graduates. Projected needs of the schools of nursing are related to the needs of employers of nurses and of individual nurses. Recommendations are offered to resolve problems of nursing need, demand, and supply. Survey instruments are appended.

Mills E. Wayne, Boyd Ronald P, Moore James B, Gordy Jack R, Lampton T. D
Mississippi Regional Medical Program, Jackson.
Proposal for Designation of a Health Service Area for the State of Mississippi.
118p Mar 75 Available NTIS HRP-0004306

The proposition that more effective health care planning and development of health services can be provided for the populace of Mississippi through the designation of a single health care service area is explored in this report of the Mississippi Regional Medical Program. Examined in connection with geographic requirements of P.L. 93-641, the concept of a single health care area is in compliance with regulations, and it would have the ability to coordinate and direct the entire spectrum of health planning activities, eliminating fragmented planning and duplication of effort. An overview of the State is given with information on population, employment and the economy, education and income, and geographic data. Health care facilities are inventoried, including hospital beds, nursing homes and extended care facilities, facilities for mental health and mental retardation, and facilities for the blind and deaf. The medical manpower of the State is also surveyed -- physicians, dentists, nurses, and allied health personnel. Patient origin and referral patterns are given, together with a description of the needs of metropolitan and nonmetropolitan areas. Tables and maps present data in support of the single health care area designation. Portions of this document are not fully legible.

Missouri State Dept. of Social Services, Jefferson City. Office of Comprehensive Health Planning.
Missouri Health Manpower Conference. Proceedings of the Statewide Conference on Health Manpower. Held in Jefferson City, Missouri April 22 and 23, 1974.
87p Apr 74 Available NTIS HRP-0002006

Missouri Statewide Health Manpower Conference aimed to be a beginning in improving health care delivery planning capability in the state. Participants were informed about national, regional and state developments and problem areas affecting health manpower and long-term planning needs. Conference also considered data requirements for health manpower development planning, e.g. use of current data in health manpower planning, and priorities and models used in collecting this data. Workshop participants developed recommendations for collecting Statewide health manpower data for evaluation; developed models to assist in planning health manpower systes, and developed statewide planning goals and objectives. Participants were asked to take concepts, recommendations and data from the workshop sessions back to their respective committees, and to utilize conference guidelines in developing areawide plans for health manpower, in conjunction with Missouri's CHP agencies. Workshop report topics include: family practice physician; dental manpower; long term planning; educational coordination; nursing manpower; allied health manpower; and environmental health.

National Center for Health Statistics, Rockville, Md.
Selected National Data Sources for Health Planners.
237p 1976 Available from the Scientific and Technical Information Branch, National Center for Health Statistics, 5600 Fishers Lane, Room 8-20, Rockville, Md. 20852.

References to the most useful sources of data available for meeting the needs of State and local health planners, particularly Health Systems Agencies and State Health Planning and Development Agencies, are provided. The manual includes only sources made generally available by public and private organizations which serve a national constituency. It is not intended to include secondary data which are available just as conveniently from the primary sources listed. A section of general health statistics sources such as the Area Resource File of the Bureau of Health Manpower and the Cooperative Health Statistics System is provided. Specialized categories include: health status and problems; health care resources - manpower; health care resources - facilities; utilization of health care resources; national health care programs; health economics; and demographic data sources. The section on health status and problems covers morbidity, mortality, and natality. Manpower resources include associated health professions, dentistry, medicine

and osteopathy, nursing, optometry, pharmacy, podiatry, and veterinary medicine. National health care programs include Social Security, Medicare, Medicaid and public assistance, and vocational rehabilitation. For each data source, the following information is provided: publishing agency, date and periodicity, geographic area covered, population covered, and data elements included. A glossary is appended.

Nebraska State Dept. of Health, Lincoln. Bureau of Comprehensive Health Planning.
Proposal for the Analysis of, and Planning for, Improved Distribution of Nursing Personnel and Services.
14p 1975 Available NTIS HRP-0010525

A proposal by the State of Nebraska to conduct a model demonstration project in nurse manpower planning is presented. The proposed project has the following objectives: (1) construction of a nurse manpower model for the State, based on a service target approach; (2) forecast of nursing requirements and supply through 1987; (3) involvement of recently established health systems agencies; (4) development of techniques and alternatives for resolving distribution problems; (5) use of State / regional conferences to facilitate involvement of user groups in the planning process; (6) implementation of short term training courses for nurses interested in manpower planning and development; (7) participation in efforts related to establishment of regional planning centers affecting Nebraska; and (8) establishment of program evaluation criteria. In addition to outlining proposed activities, the document summarizes the findings of a 1974 study on the need for nurses in Nebraska and discusses relevant parts of the State health manpower plan. Cost estimates are included.

Nebraska State Dept. of Health, Lincoln. Office of Comprehensive Health Planning.
Study of Need for Nurses in Nebraska.
53p Dec 74 Available NTIS HRP-0010527

The results of 1974 study of the need for nurses in Nebraska are reported. The study, initiated at the request of the Voluntary Post-Secondary Educational Council, was subsequently accelerated in response to a charge by the 1974 State legislature to develop a plan for nursing education for the State. The study had three purposes: (1) determination of the number of nurses needed to maintain the quantity of nurses required; (2) determination of the level of educational preparation for nurses required to maintain the quality of services required; and (3) determination of the distribution of nurses throughout the State required to maintain both quantity and quality of services. National

criteria were applied to data about the supply of registered nurses and to data about utilization of nurses to establish estimates of need according to numbers, educational preparation, and distribution throughout the State. It was found that 10,733 professional nurses were needed in 1973, contrasted to an actual employment of 6,980. Shortages exist in all fields of employment, with the greatest numerical need in hospitals. Projected graduation from schools of nursing exceeds projected need, and it is estimated that the deficit will decline at an average annual rate of 1.4 percent through 1985. Need exists for baccalaureate prepared nurses in occupational health, school nursing, and community health. The need for masters and doctoral prepared nurses is critical, with only 15 percent of the State's need being met. Maldistribution is a problem in all areas of the State. Implications of study findings are presented. Supporting tabular data are included.

New England Board of Higher Education, Wellesley, Mass.
New England Council on Higher Education for Nursing. Papers Presented at a Conference on Planning for Health and Nurse Manpower in New England.
40p Oct 75 Available NTIS HRP-0009397

The proceedings of a conference on health and nurse manpower planning in New England, sponsored in October 1975 by the New England Council on Higher Education for Nursing, are reported. The two-day conference was attended by representatives from institutions in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont and by government and professional nursing association representatives. The presentations reproduced in the conference report cover the following topics: nurse participation in health planning and resources development; the Massachusetts health manpower linkage project; background and planning techniques of the Rhode Island Health Science Education Council; planning activities of the Connecticut Institute for Health Manpower Resources; the national project concerning analysis and planning for improved distribution of nursing personnel and services; and New England activities contributing to the national project. A list of program participants is included.

New Jersey Dept. of Higher Education, Trenton.
Analysis of the Need for Nursing Personnel in New Jersey.
84p 22 Nov 76 Available NTIS HRP-0016627

Supply and demand projections for registered nurses in New Jersey through 1985 are examined as they pertain to State Department of Higher Education policies regarding support of undergraduate nursing education. The analysis uses data

obtained from the department's health manpower information system. The report is in six parts: (1) an examination of the national perspective on nursing and nursing education in the 1960's and early 1970's; (2) data on the status and distribution of nurses in New Jersey as of January 1975; (3) supply and demand projections for all registered nurses and for nurses prepared at different educational levels from 1975 through 1985; (4) projections of shortages or surpluses of nursing personnel; (5) alternative models for taking into account the possibilities of increasing use of extender personnel (e.g., nurse practitioners and physician's assistants), phasing out of diploma nursing programs, and freezing enrollment; and (6) findings and conclusions. The analysis demonstrates that New Jersey will have a growing surplus of nursing personnel, beginning in 1979. On the basis of the analysis it is recommended that no new associate degree programs be authorized and that enrollments in existing programs be held at the 1977 level. Capitation funding ceilings are recommended for the State's diploma schools, as is a moratorium on the establishment or expansion of 4-year baccalaureate programs. Supporting data and technical materials are appended.

New Jersey Dept. of Higher Education, Trenton. Office for Health Manpower.
Study of the Potential Need for Nurse Practitioners and Physician's Assistants in New Jersey.
152p Jan 77 Available NTIS HRP-0016693

A study of the potential demand for and supply of nurse practitioners (NP's) and physician's assistants (PA's) in the private practices of New Jersey primary care physicians is documented. Linear programming is used to determine the physician and extender personnel requirements of an efficient, innovative, office-based primary care system, and to measure the potential gains in productivity associated with extensive use of extender personnel. Data for the analysis were gathered in a survey of 2,273 randomly selected primary care physicians in New Jersey (24.1 percent response). In addition, supplies of extender personnel are calculated on the basis of rates of graduation from New Jersey programs and immigration from surrounding States. Data from surveys of NP's and PA's, and registered nurses are used to assess substitutability between NP's and PA's and the extent of interest in careers as NP's or PA's among nurses. A demand for 908 NP's and 759 PA's by 1985 is projected. It is estimated that, with the efficient use of NP's and PA's, New Jersey's primary care practices could supply 40 percent more services. Reliance on existing programs in New Jersey and possible immigration will not meet the projected demand for extender personnel. Significant substitutability between NP's and PA's and substantial interest in expanded role

careers among registered nurses are documented. Supporting data, study instruments, and a bibliography are included. Portions of this document are not fully legible.

Norod Elizabeth F, Peterson Evelyn T, Fredrickson Lola I
Minnesota Nurses' Association, St. Paul.
Interstate Regional Planning for Rural Nursing. Final Report: Phase III.
98p Jul 73 Available NTIS HRP-0003185

A project carried out by the Minnesota Nurses' Association and sponsored by the Division of Nursing, Public Health Service, DHEW, to determine the feasibility of undertaking interstate regional planning for nursing needs and resources in the Ninth Federal Reserve District (Iowa, Michigan, Minnesota, Montana, North Dakota, South Dakota, and Wisconsin) is documented. The final report of the project includes the following: an outline of the history and organization of the project; details of the use of the Nominal Group Process, on a pilot study basis, for collection of information on nursing needs and resources with Minnesota and Wisconsin; and guidelines for continuation of efforts relative to regional planning and study of the problem of nursing in rural areas. Among the problems identified by the Nominal Group Process relative to nursing in rural areas were: shortage of staff, a constantly increasing and poorly planned workload, lack of communication among workers, limited inservice training and orientation, insufficient information about and time for patients, and weather and transportation. The feasibility of the Nominal Group Process as an exploratory research technique is discussed. Supporting documents are appended.

North Carolina Medical Care Commission, Raleigh.
Coronary Care Units: A Suggested Planning Guide for North Carolina Hospitals. Revised.
46p Jan 70 Available NTIS HRP-0003966

A planning guide is presented for use by North Carolina Hospitals in developing coronary care units. The North Carolina Medical Care Commission brought together knowledgeable individuals from several organizations and professions for an investigation of the various aspects of planning and operating coronary care units. Steps for setting up coronary care units are delineated; these include laying necessary groundwork, arranging for discussions among physicians and hospital staff, estimating the number of beds needed for the unit and determining the required changes in design and equipment, forming a coronary care planning committee, and estimating cost of operation and planning for adequate financing. General elements of operation i.e.,

staffing and of design are described. Patient electronic monitoring and the need for electrical safety, electrical circuits in patient areas, reduction of electrical faults to below critical levels, and electrical safety in special procedures areas are discussed. A diagram of the isolated electrical system is included. Nurse procedures to be followed upon fault detection alarm are reviewed. Submission of plans to the State Commission for review is discussed. A glossary and listing of organizations offering consultative services in the area of coronary care unit design and operation are included. Portions of this document are not fully legible.

NY - Penn Health Planning Council, Inc., Binghamton, N.Y.
Nursing Manpower Study: New York - Pennsylvania Area.
229p Jan 76 Available NTIS HRP-0009388

Findings are presented of a study of nursing manpower supply and distribution, future nursing manpower needs, and nurse training programs in the five-county area served by the NY - Penn Health Planning Council. Broome, Tioga, and Chenango Counties in New York and Bradford and Susquehanna Counties in Pennsylvania are included in the study. The report opens with a summary of objectives, methods, conclusions, and recommendations of the study. The technical report includes sections on the historical background of manpower planning on the Federal and local level; a description of the NY - Penn area; the work plan, structure, and data sources of the study; analysis of findings with regard to the need for and supply of registered nurses (RNs) and licensed practical nurses in the area; analysis of distribution of nursing manpower and advanced educational preparation of nursing manpower in the area; and conclusions and recommendations. The priority recommendation for the region is a marked increase in the number of nurses prepared at the baccalaureate level, with particular emphasis on a transfer RN program. This recommendation is based on existing demand and need projections and on the emergence of new roles requiring advanced preparation. Tabular data are incorporated throughout the text of the report. Additional supporting data, copies of questionnaires used to gather information from educational institutions, descriptions of nursing positions, and other supporting materials are appended.

Ohio Commission on Nursing, Columbus.
Study of Nursing Needs and Resources.
104p Sep 75 Available NTIS HRP-0009385

The views of the Ohio Commission on Nursing concerning nursing and nursing education in Ohio as of 1975 are documented, and recommendations and plans of action for the development of Ohio's nursing resources through 1985 are presented. The report is the culmination of the efforts of three work groups which focused on preventive and maintenance care, acute care, and long-term care, respectively, and of a committee consisting of representatives from each group who studied nursing education and nursing research. The report includes narrative discussions, supported by tabular data and graphs, concerning utilization and distribution of nurses in Ohio, nursing education resources, and nursing research. Among the major recommendations stemming from the study are: (1) that the number of nurses prepared at the graduate level and working as teachers, supervisors, and administrators of nursing service, and clinical specialists increase from 1,100 in 1973 to 3,000 by 1985; (2) that by 1980 continuing education be a requirement for relicensure of any indivdual practicing nursing in Ohio; (3) that a State joint practice committee be established by 1976 to clarify the roles of and relationships between physicians and nurses and to provide direction for joint efforts at physician - nurse collaboration in extending health care services to the public; and (4) that by 1985 the basic nursing educational programs prepare two types of nurses whose roles are classified according to collection of facts, use of facts, technical and relationship skills, health guidance and teaching functions, direction and supervision, and types of clients cared for. Rationale for these and other recommendations are provided, as are plans of action relative to each recommendation. Data on nursing and nursing eduation, distribution of service and educational facilities, hospital nursing service directors, and nursing supply projections are appended. A glossary and list of references are provided.

Oklahoma Interagency Task Force for Health Manpower Data, Oklahoma City.
Oklahoma Health Manpower, 1975-1980.
167p Jul 75 Available NTIS HRP-0002761

Results of a survey of health manpower needs in Oklahoma from 1975 to 1980 are reported. The survey was designed to meet State needs for baseline information for use in planning education and training programs. A questionnaire was submitted to self-employed health personnel and to health workers in private offices, hospitals, nursing homes, clinics, health departments, other health agencies, nursing

schools, and college and university health services. Only health-related employment settings were surveyed, and employment categories filled primarily by individuals given on-the-job training were not surveyed. Occupations were surveyed by regions within the State. Charts and tables illustrate the distribution of self-employed occupations and a brief status report is given for emerging occupations such as physician's assistant and nurse practitioner. Survey data from employers provides information on the status of employed occupations such as hospital administrator or health planner; forecasts are based on budget needs indicated by the employer. Tables provide information on employed categories by region concerning employment in occupation, gross manpower demand, net manpower demand, and training institutions. All occupations are defined. Appendices contain the survey instrument, survey response figures, and a list of publications by the State of Oklahoma. An index is included.

Oreglia Anthony, Klein Denise A, Crandall Lee A, Duncan Paul
Purdue Univ., West Lafayette, Ind.
Guide to the Development of Health Resource Inventories.
205p 24 Aug 76 Available NTIS HRP-0200301

A guide for health planners involved in developing health resource inventories and compiling information on specific types of health resources is presented. The general purpose of the development of health resource inventories is to allow health systems agencies (HSAs) and State agencies to carry out the planning, resource development, and project review functions prescribed by the National Health Planning and Resources Development Act of 1974 (P.L. 93-641). The four agency functions that call for inventory data are discussed. It has been assumed that the necessary inventories will be developed at the HSA level; the audience for the guide will therefore be the HSA planner. Several concepts central to the development of health resources inventories are defined, and a discussion of data sources is included. Only sources which contain data at the individual service-producing unit level are discussed in detail. Also discussed are the steps in the inventory development procedure. These include: determining information needs for specific types of health resources, developing a list of individual service-producing units, obtaining information on selected data items, and updating information. Inventory components are described for hospitals, nursing homes, other health facilities, health manpower, and health manpower institutions. Appendices include a health resources inventory legislative review, an outline of the status of Cooperative Health Statistics Systems Contracts, and related material. Approximately 50 publications are reviewed in the body of the guide, and references are included in the back.

Palm David
Nebraska State Dept. of Health, Lincoln. Bureau of Comprehensive Health Planning.
Strategies for Alleviating Health Manpower Shortages.
33p 15 Apr 75 Available NTIS HRP-0010526

Factors which influence the practice location of professional health manpower are examined, and strategies for eliminating health manpower imbalances are suggested. Drawing on the findings of earlier studies, the analysis classifies physician location influences in four areas: environment, prior exposure, professional relationships, and economic factors. Less detailed consideration is given to factors influencing dentists, optometrists, podiatrists, veterinarians, pharmacists, and registered nurses. It is observed that the selection of a location by a health professional is a complex process involving a number of considerations. It is, therefore, important to concentrate on those factors which are potentially the most effective when designing a strategy to alleviate manpower shortages. The variables identified as having the greatest potential for policy manipulation are those classifiable as prior exposure, professional relationships, and economics. It is suggested that the variables within these classifications can be influenced most effectively by changing medical education and training programs, altering the medical environment (e.g., introducing group practices), or providing larger financial incentives, such as loan forgiveness programs, to health professionals. A bibliography is provided.

Patterson Dorrie
Exercise in Patient Classification as a Means of Calculating Staffing Requirements U.H.W.I. Mona.
Pub. in Jamaican Nurse v16 p6-8 May 76.

A patient classification study undertaken at University Hospital of the West Indies as part of an examination of the hospital's staffing practices is described. The purpose of the overall study was to determine whether the existing system of assigning numbers of nursing personnel to clinical areas was adequate and, if the system was found to be inadequate, to establish a better method. The objectives were as follows: (1) categorize all patients according to their requirements for nursing care in each of 12 medical and surgical wards; (2) to estimate the amount of nursing time required by each category of patient during the day; (3) to calculate the total amount of nursing time required by all patients in each ward and the number of nursing personnel needed to meet that requirement; and (4) to compare the calculated number of required nursing personnel with the actual number of assigned personnel. Using a form to categorize patients' personal care, feeding, observation,

ambulation, and personnel requirements as intensive, minimal, or average, nurses recorded the requirements of all patients on a daily basis. Of an average 21.4 patients per ward, 8.1 needed minimal care, 11 needed average care, and 2.3 needed intensive care. The formulas used to calculate the amount of nursing time and numbers of nursing personnel required on each ward are presented. A copy of the checklist used to classify patients is provided.

Public Health Service, Bethesda, Md. Div. of Nursing.
Planning for Nursing Needs and Resources.
204p Apr 72 Available NTIS HRP-0003175

Basic guidelines and elements essential to effective planning for nursing are presented and principles and procedural methods for meeting a variety of changing conditions are discussed. These guidelines are primarily intended for use in planning for all fields of nursing service, nursing education, and nursing personnel within designated geographic areas. Topics dealt with include the nature of planning, initiating planning, building an organizational structure, strengthening the organizational structure, assessing needs and developing the plan of action, factfinding, and assessing requirements for nurse manpower. Schematics illustrate organizational structures for situations in which: a task force has policy-making responsibility; a steering committee has policy-making and executive responsibilities; a single top level committee or commission has combined advisory and policy-making responsibilities; and a council has executive, policy-making, and advisory responsibilities. An organizational structure also is provided for areawide planning and simultaneous planning for subareas or regions. Appendices present lists of guides to planning with short summaries of each listing. Included are survey and study reports, background material and tools for planning, and a guide to statistical data.

Rhode Island Dept. of Health, Providence. Office of Comprehensive Health Planning.
Rhode Island -- The Picture of Health.
29p Jan 75 Available NTIS HRP-0004171

An overview of health care resources and services in Rhode Island is presented by the Office of Comprehensive Health Planning. Factors such as geography, demography, governmental organization and administration are discussed in general terms. Rhode Island and U. S. population characteristics are compared. Several innovative programs have been generated by the Department of Health including: cervical and breast cancer screening programs; maternity and infant care programs; a child development center; crippled

children's programs; and oral cancer, environmental health, and hypertension programs. In every health discipline, the ratio of personnel to total population is higher in the State than in the nation. Licensed health manpower is inventoried according to number and rate per 100,000. Establishment of a medical school at Brown University is noted and other educational health manpower programs are described. Data are presented on the 14 acute care hospitals in the State. Services provided by chronic and psychiatric hospitals, by nursing and personal care homes and at neighborhood health centers are described, together with emergency medical services, outpatient services, community mental health centers, home health care, and a multiphasic sceening center. Data are provided on health maintenance organizations and third party coverage. A recently enacted catastrophic health insurance program is discussed. Major data systems are described and State and Federal Certificate of Need controls are outlined.

Robbins Martha H, Krewson Lyle R
Iowa State Office for Planning and Programming, Des Moines. Div. of State Planning.
Iowa Health Manpower Plan 1975.
222p Jul 75 Available NTIS HRP-0005500

A health manpower plan that promotes the identification of area health needs and seeks to integrate resources to meet those needs is proposed by the Iowa State Office for Planning and Programming. Socioeconomic, demographic, and manpower data were obtained from previous studies and compiled to show the characteristics, locations, and trends of health manpower in Iowa. Two models were used in assessing need and demand: a services utilization model and a population ratio model. These models were applied to seven health manpower categories and health manpower needs across the State were prioritized. The seven health manpower categories are: medicine and osteopathy, dentistry, optometry, podiatry, pharmacy, nursing, and veterinary medicine. The supply of each of these manpower categories is identified according to type of practice, age, and utilization; the practice location is assessed; analyses of the results of model applications are presented; and recommendations are suggested to resolve shortages. Each manpower category is followed by tables depicting results of model applications, manpower supply, and priority categories, and by State maps. Appendices present tabular data for each category as well as geographic, socioeconomic, and demographic data. A bibliography is included.

Roth Aleda V, Walden Alice R
American Nurses' Association, Kansas City, Mo.
Nation's Nurses: 1972 Inventory of Registered Nurses.
128p 1974 Available from the American Nurses' Association, 2420 Pershing Rd., Kansas City, Mo. 64108, $3.00.

This document presents the results of a 1972 nationwide survey of nurses conducted by the American Nurses' Association to measure the actual volume of nurse manpower and to determine its distribution. Extensive tabular material provides data on the registered nurse population, employed registered nurses, employment setting, areas of clinical practice, and an analysis of inactive nurse manpower. Information was gathered through State licensing procedures. A uniform set of questions was included on licensure applications, and some special studies were undertaken through use of questionnaires. A total of 1,127,657 registered nurses were identified as holding licenses to practice. This figure represents a 33 percent increase during the past decade. Trends indicating a fall in the proportion of inactive registered nurses under 30 and a rise in the number of older nurses maintaining active licenses also were identified. This inventory indicates that over three-fourths of the manpower projected for 1975 for registered nurses is available; but the number of baccalaureate level nurses falls far short of the projected need, and some areas of the country are experiencing shortages of nurses.

San Joaquin General Hospital, French Camp, Calif.
Development of Methods for Determining Use and Effectiveness of Nursing Service Personnel.
353p Sep 76 Available NTIS HRP-0014776

A study was initiated at the San Joaquin General Hospital in Stockton, California, in 1974 to develop a general conceptual framework for decisionmaking with regard to staffing and factors affecting the provision of nursing care within the hospital. Five major objectives of the study were stated: (1) develop a conceptual framework for staffing; (2) devise or refine methods for obtaining data on nursing activities; (3) assess the relationship between selected patient characteristics and nursing activities; (4) develop or refine methods involved in the development of a staffing methodology; and (5) develop methods related to the assessment of care given as compared to desirable care. The conceptual framework for staffing is described and illustrated. Factors affecting services offered within the hospital are national influences, State and community influences, institutional characteristics, medical department staff, clients and patients, nursing department staff, and staff members of other hospital departments. Three commonly

used staffing evaluation methods are identified as self-recording by personnel, the use of a human recorder, and the use of sampling observations. The application of work sampling techniques is detailed. Steps involved in the use of a patient classification system as a basis for workload estimates are outlined. The estimation of staff adequacy and its impact on quality of care are addressed. Extensive tabular data are provided on the results of the study. Calculations and information are appended for determining the number of observations needed for work sampling techniques.

Segall M, Sauer K
Nurse Staffing in the Context of Institutional and State-Level Planning.
Pub. in Nursing Administration Quarterly v2 n1 p39-50 Fall 77.

Solberg Andrew L, Yuter Sheila
Maryland Dept. of Health and Mental Hygiene, Baltimore, Health Manpower Linkage Project.
Survey of Methodologies Used for Determining Health Manpower Requirements.
73p Sep 76 Available NTIS HRP-0014294

The results of a survey of methodologies used by Federal, State, and local agencies to determine manpower requirements for six health professions are presented. The National Health Planning and Resources Development Act of 1974 mandates that planning identify and answer the needs for health manpower. In July 1974, the Maryland Comprehensive Health Planning Agency was awarded a health manpower linkage contract from DHEW, part of which included the charge of studying health manpower requirements within the State of Maryland for dentists, nurses, optometrists, pharmacists, physicians, and podiatrists. Techniques employed by other planners in the development of health manpower requirements are reviewed. A glossary of the terminology consistently used in literature on health manpower requirements is provided. Criteria used in determining the kinds of information to be included in the survey of methodologies are noted. The method of information collection used in the survey is discussed, along with the sources from which this information was obtained. During the course of the survey, it was found that methodologies for determining health manpower requirements fall into five general categories: (1) comparison to existing ratios; (2) budgeted vacancy approach; (3) professional judgment concerning health care needs; (4) health maintenance organization ratios; and (5) a demand model. The assumptions upon which each methodology grouping is based are examined, and the advantages and disadvantages of each are explored. Methods used by planners to determine the required number of dentists, nurses, optometrists,

pharmacists, physicians, and podiatrists are detailed. References and a bibliography are included.

Sorkin Alan
Health Manpower.
192p 1977.
Available from Lexington Books, 125 Spring St., Lexington, MA 02173.

Southeast Arkansas Economic Development District, Inc., Pine Bluff. Areawide Health Planning Program.
Southeast Arkansas Areawide Health Plan.
168p 1975 Available NTIS HRP-0004326

A comprehensive health plan is presented for ten counties of southeastern Arkansas. The planning area is essentially rural, although it does contain the second most populated county in the State. Residents tend to be far below average in income and education. Following a statement of health goals and general objectives, a description of the planning area is presented, including geography, economic and social indices, population projections, and vital statistics. An inventory of existing planning programs, facilities, services, and manpower is presented, followed by a statement of health priorities, needs, objectives, and methods of implementation in the areas of physical health, mental health and mental retardation, and environmental health. Six of counties in the area have been designated as critical physician shortage areas and three as critical dentist shortage areas. The area has 11 hospitals and 22 nursing homes. A health priorities survey, administered at public meetings and through the mail (250 responses) is described. Through the survey, problem areas were ranked by priority as follows: lack of physicians, drug abuse, lack of dentists, lack of registered nurses, alcoholism, health education, lack of licensed practical nurses, mental retardation, lack of outpatient clinics, hospital improvement, home health care, day care centers, mental health, child care services, family planning, nursing homes, environmental health, hypertension, occupational health and safety, emergency medical services. Statements of goals and needs, objectives, and implementation methods are structured around several of these priorities. Appendices include a discussion of relevant legislation, a flowchart depicting the review and comment process, standards and criteria for determining need and demand, and an 11-page glossary. Thirty-four tables and three maps are included.

Sparks Robert D
Nebraska Univ., Omaha. Medical Center.
Recommendations for a Statewide Plan for Nursing Education in Nebraska.
60p Jan 75 Available NTIS HRP-0010528

In response to a request by the 1974 Nebraska State Legislature, a comprehensive plan for nursing education in Nebraska is presented by the University of Nebraska Medical Center. Focusing on the career ladder concept, improvement of instruction, and continuing education, the plan includes both short and long term goals based on needs for nursing manpower in Nebraska and delineation of responsibility for nursing education within the post-secondary educational system of the State. The plan is in the form of a series of recommendations based on data from a Comprehensive Health Planning Committee study of need for nurses in Nebraska, data from schools, an examination of the strengths of programs as evidenced by their past record, and consideration of problems confronting institutions preparing nurses for employment in Nebraska. The recommendations, each followed by relevant rationale and a summary of pertinent data, address the location and types of educational programs, continuing education, and articulation. Frequent reference is made to supporting tabular data presented in a separate section of the report. The major deficit in educational preparation of nurses in Nebraska is in the area of baccalaureate and higher degrees. A 1974 needs study revealed that, while 77.6 percent of the need for non-degree nurses was being met, only 36.7 percent of the need for baccalaureate nurses and 15 percent of the need for masters and doctoral nurses were being met by current supplies. Additional supporting data, an estimation of need for nurses in 1980, and criteria used in need computations and in determination of minimal educational goals for nursing personnel are appended.

Stackler Louis M, Coles Leland
Northern Oklahoma Development Association, Enid.
Comprehensive Health Plan for the Sub State Planning Districts OEDA and NODA.
230p 1976 Available NTIS HRP-0011226

The primary purpose of the Northern Oklahoma Development Association and the Oklahoma Economic Development Association (NODA/OEDA) health planning councils is to stimulate the establishment and continual reevaluation of locally identified health goals by providers, consumers, and public agencies. The councils provide planning assistance to individual health care institutions through task forces on hospital facilities, nursing home facilities, and emergency medical services. Comprehensive health planning in the NODA / OEDA region is viewed as a process that will enable

rational decisionmaking about the use of public and private resources to meet health needs. The definition of comprehensive health planning encompasses physical, mental, and environmental health; facilities, services, and manpower required to meet health needs; and the development and coordination of public, voluntary, and private resources to meet needs. Objectives of areawide community health planning are listed, and steps in the comprehensive health planning process are outlined. Community planning is examined in relation to health plan factors and standards for health planning. A description of the NODA / OEDA health planning region is provided. General health data on the region's population are tabulated. Information is presented on area health facilities, bed need projections, and military facilities. Eight components of the regional health plan are detailed: acute inpatient care, chronic inpatient care, convalescent inpatient care, ambulatory care, home health care, public health services, mental health services, and emergency medical services.

Starr Sheldon
National Center for Health Statistics, Rockville, Md. Div. of Health Manpower and Facilities Statistics.
Health Resources Statistics: Health Manpower and Health Facilities, 1975,
544p 1976 Available NTIS PB-267 240/0

Statistics are presented for occupations which include physicians, dentists, nurses and other allied health occupations. Data are presented on all hospitals, nursing care and related homes and other important health facilities in the U.S. Also included are data on outpatient and nonpatient health services, chemical laboratories, family planning, group practices, hospital outpatient services, etc. The report is based on data from the Division of Health Manpower and Facilities Statistics and other sources. (NTIS)

Statewide Master Planning Committee for Nursing and Nursing Education, Atlanta, Ga.
Nursing in Georgia 1975. A Perspective.
118p 1975 Available NTIS HRP-0012529

Nursing needs, resources, and educational patterns are examined in a 1975 report by Georgia's Statewide Master Planning Committee for Nursing and Nursing Education. The registered nurse population in Georgia is defined, based on a profile of health care personnel in each of the State's 159 counties. The availability of educational programs to prepare licensed practical and registered nurses is discussed. This discussion focuses on the location of each educational program, the size of classes, the number of

faculty and their preparation, the clinical facilities used, and the number of students who enter versus the number who graduate and the number who pass licensing examinations. In 1972, there were 17,423 registered nurses in Georgia. Of these, 12,353 or 70.9 percent were actively practicing and 4,836 were inactive. Approximately 75 percent of all registered nurses completed their basic education in a hospital-based diploma program. Basic and practical nursing programs are described, and supporting tabular and graphical data on these programs are provided. The effectiveness of educational resources and programs is evaluated, and the costs of nursing education are assessed. Educational preparation for various nursing roles is considered, including geriatric nursing, occupational health nursing, nurse anesthetists, nurse midwives, community health nursing, and school health nursing. The significance of continuing education for nurses is stressed. The role of nurses in clinical practice is detailed. Recommendations are made with regard to nursing education and clinical practice. Additional data and information on health manpower in Georgia is appended.

Stiles, Jr George
Abt Associates, Inc., Cambridge, Mass.
Site Visit Report for the Missouri Area Health Education Center Program.
108p Nov 75 Available NTIS PB-254 702/4

The Missouri Area Health Education Center (AHEC) project is one of eleven Bureau of Health Manpower (HRA - DHEW) supported projects which were established to improve the geographic and speciality distribution of health personnel. This report describes the development, organization and activity of the AHEC as well as project antecedents; contextual information; quantitative data on the distribution of project expenditures and characteristics of education activities i.e., medicine, dentistry, nursing, allied health, etc., conducted through the first three years of the project's five year contract term. This report also discusses the major problems encountered and early achievements of the Missouri AHEC. (NTIS)

Stiles, Jr George
Abt Associates, Inc., Cambridge, Mass.
Site Visit Report for the New Mexico Area Health Education Center Program.
47p Nov 75 Available NTIS PB-254 703/2

The New Mexico Area Health Education Center (AHEC) project is one of eleven Bureau of Health Manpower (HRA - DHEW) supported projects which were established to improve the

geographic and speciality distribution of health personnel. This report describes the development, organization and activity of the AHEC as well as project antecedents; contextual information; quantitative data on the distribution of project expenditures and characteristics of education activities i.e., medicine, dentistry, nursing, allied health, etc., conducted through the first three years of the project's five year contract term. This report also discusses the major problems encountered and early achievements of the New Mexico AHEC. (NTIS)

Teitelman Peter W
Northwest Indiana Comprehensive Health Planning Council, Inc., Highland.
LaPorte County Health Facilities and Services Study.
69p Oct 75 Available NTIS HRP-0008021

A survey of health facilities and services in LaPorte County, Indiana is presented by the Northwest Indiana Comprehensive Health Planning Council. LaPorte County contains a mixture of rural and urban populations, a large portion of which relies on industry for employment. The report includes the following: a population and health status profile; description of health facilities and services (hospitals, nursing homes, county health department, Visiting Nurses Association, and other health agencies); examination of utilization trends for hospitals, emergency departments, nursing homes, and home care; information on health education and manpower resources; financial information; and bed need projections for hospitals and nursing homes. The following major conclusions are reached: (1) the live birth rate has been declining in LaPorte County since 1970; (2) nearly all major hospital services are duplicated in the county; (3) nursing homes and hospitals have built facilities in excess of community need and have experienced decline in occupancy levels; (4) shortages of health manpower, particularly primary care physicians and nurses, exist; (5) annual cost of health services is estimated at $28 million, or about $262 per capita; and (6) hospitals in LaPorte County, particularly in Michigan City, overutilize inpatient hospital services. Several alternative recommendations are presented and analyzed, including: taking no action, closing entire facilities, closing portions of facilities; developing alternative uses of existing facilities, sharing services, and merging facilities. A schedule for implementing the recommendations is provided. Supporting data and a bibliography are included.

Vector Research, Inc., Public Health Service, Hyattsville, Md., Div. of Nursing.
The Impact of Health System Changes on the Nation's Requirements for Registered Nurses in 1985.
71p 1978 Available NTIS HRP-0900582

The impact of three anticipated changes in the health care system on the future requirements for registered nurses is assessed. The introduction of National Health Insurance (NHI), the increased enrollment in Health Maintenance Organizations (HMOs), and the reformulation of nursing roles. An empirical model of the health system was developed, using Bureau of Census predictions concerning the size and composition of the future population, estimates of the amount and type of services used by this population, and predictions of the number of nursing personnel employed to satisfy these future health service demands. Estimates of future requirements in the general absence of each change were then quantitatively compared to estimates incorporating substantial occurrence of the change. It was determined that future growth in HMO enrollments is the least significant factor determining the need for nurses. The most significant potential influences on future nurse requirements are the acceptance of role reformulation, which is partially within the capability of nurses to influence, and the passage of NHI legislation, which is not under direct control of the nursing profession. Figures, tables, and charts present the findings of the study. Appendixes include: The VRI Nurse Requirements Model, Results Using the VRI Nurse Requirements Model, and References. (This is a revised edition of a 1977 report. See entry under Doyle et al. in this section.)

Weber Basin Health Planning Council, Ogden, Utah.
Health Plan: Chapters 1 and 2.
74p Mar 75 Available NTIS HRP-0003364

A health plan is formulated for the Weber Basin Area (Weber, Morgan and Davis Counties) of Utah based upon identification of existing facilities and projection of future needs. Acute care centers (hospitals), extended care centers (nursing homes), and special facilities are assessed with regard to occupancy rate, staff, services, inpatient beds, source of payment, and patient origin. Recommendations are made on the assumptions that: (1) conditions such as population trends, economic conditions, etc., in the Weber Basin area in 1980 will substantially correspond to present-day conditions; (2) patient days will tend to increase or decrease in each county in direct proportion to age-specific population changes; (3) each of the individual county recommendations will assume an optimal occupancy rate of 85 percent; (4) patient days for noncounty residents will increase or decrease at the same rate as patient days for county residents; and (5) the

average length of stay will remain at the present minimum level. It is not contemplated that this plan is in its final form. With the attainment of new plateaus of information and the expansion of goals and initiation of programs, the plan and the programs resulting from it will find themselves in a state of continual change.

West Michigan Comprehensive Health Planning Unit, Grand Rapids. Emergency Medical Services. A Plan for West Central Michigan. 104p 1975 Available NTIS HRP-0004251

An emergency medical services (EMS) plan for the 12 counties served by the West Michigan Comprehensive Health Planning Unit is presented. Although 59.6 percent of the region's population is considered urban, only two of the 12 counties have over 50 percent of their population living in an urban setting. The region includes the cities of Muskegon and Grand Rapids; the remainder of the area is essentially agricultural and recreational. The planning region's boundaries, climate, population, economics, transportation, and legislative characteristics are described, and the magnitude of the emergency services' problem is defined. Existing situations, goals, and recommendations are presented in the following areas: communications (telephone communications, 911 emergency number, emergency dispatch, ambulance-to-hospital radio communication, biomedical telemetry, interhospital radio communications, records); transportation (ground ambulance design, ambulance personnel, air ambulance, ambulance equipment, emergency units, extrication); facilities (utilization, categorization, accessibility to care, interfacility patient transfer, staffing, records); critical care units (trauma, coronary care units, burn treatment, neonatal intensive care, spinal cord injuries, poison control centers, substance abuse, psychiatric emergencies, suspected rape); manpower and training (training courses, law enforcement personnel, fire fighters, ambulance service, dispatch personnel, disaster planning, nurses, physicians); and consumer information and education. A bibliography follows each chapter. Appendices present supporting tabular data and graphs for each chapter. Portions of this document are not fully legible.

Wilder J. F, Kalb R
Manpower Allocation: Meeting the Needs of Staff or Patients? Pub. in Hospitals and Community Psychiatry v29 n1 p15, 9 Jan 78.

Wilson Kirke, Savitsky Elaine, Wood Elizabeth
Community Change, Inc., San Francisco, Calif.
Retrospective Study and Evaluation of Nursing Planning, A Feasibility Study.
194p 14 Dec 73 Available NTIS HRP-0003607

A preliminary study of nursing planning, designed to determine the feasibility of conducting an in-depth study of nursing planning, is presented, based on 97 studies (67 of which have been completed) between 1965 and 1972. Data were collected through review of publications of nursing studies, telephone interviews with key persons in completed studies, and visits to five representative study sites. Three primary influences on nursing planning -- conceptual (changing existing ideas about nursing), procedural (the actual planning process), and contextual (planning within the health environment) are discussed. The 97 studies of nursing planning are examined in terms of their sponsoring organizations, geographical scope, nursing discipline, education, organization, sources of funds, staffing, data collection methods, and implementation. Preliminary analysis of planning activity indicates that the type of sponsor of a planning activity influences the scope, purpose, structure, and results of a study; that planning structures and implementation are influenced by the purposes of the planning; and that planning methods are influenced by type of data collection and availability of data. Five case studies based on site visits are described. Conditions for the feasibility of an in-depth study are identified as: accessibility of key persons, adequate records, and accurate available data. Recommendations for an in-depth study and its content are suggested. Appendices include a list of planning studies, tables, a glossary, and site visit data. Portions of this document are not fully legible.

Wong John C
Bureau of Health Resources Development, Rockville, Md. Div. of Regional Medical Programs.
Data Resources for California Health Manpower Planning.
244p Jun 76 Available NTIS HRP-0014693

Data are provided on physician manpower in California, and the education of physicians for primary care is addressed. Medical education, ethnic composition of medical school students, and a directory of approved internships and residencies are provided. Data are also given for nurses, midlevel practitioners, dentists, pharmacists, optometrists, and allied health personnel. Consideration is given to licensure, health manpower models and projections through 1980, and medical schools and health career education and training programs in California. The compiled information resources primarily cover the period between 1965 and 1975,

although health manpower projections are made for 1980. The data are intended for use by official and voluntary health planning agencies and educational development and employment programs. The lack of coordination among area, State, regional, and national agencies with regard to health manpower planning and education is noted.

VII. BIBLIOGRAPHIES AND SUMMARIES

Abernathy W. J, Baloff N, Hershey J. C
Stanford Univ., Calif.
The Nurse Staffing Problem: Issues and Prospects,
33p Nov 70 Available NTIS HRP-0000689/0

The problem of forecasting demand and allocation of manpower resources for the nursing staff of large hospitals is presented and discussed by Stanford University faculty members, and a conceptual basis for interrelating nurse staffing procedures is outlined. The nursing staff is often underutilized because of inadequate planning in both forecasting and allocation, insufficient flexibility in meeting the fluctuations of short-term demand, and lack of effective evaluation and control of staffing procedures. At present, staffing demand is usually evaluated on the basis of relatively long-range forecasts (up to 18 months) and thus is insensitive to short-range fluctuations. Nursing personnel are allocated on the basis of peak demand in the various departments or wards over the forecasting period, and there is little flexibility for meeting short-term demands. (NTIS)

Akhtar Shahid
International Development Research Centre, Ottawa (Ontario).
Low-Cost Rural Health Care and Health Manpower Training. An Annotated Bibliography with Special Emphasis on Developing Countries. Volume 1.
165p 1975 Available from the International Development Research Centre, Box 8500, Ottawa, Canada K1G 3H9, $5.00.

An annotated bibliography is presented of literature pertaining to nontraditional health care delivery systems in remote regions of the world, particularly in developing countries. The literature cited focuses primarily on new models of health care delivery and on the training and utilization of auxiliary workers. The material is intended to be of use to persons involved in planning, operating, and evaluating systems to provide rural health services; persons concerned with the training of auxiliary health workers to staff such systems; and organizations supporting research into the problems of organizing and staffing health care delivery systems. An introductory discussion of issues and alternatives in rural health care precedes the listings, each

of which includes complete bibliographical information and an abstract. The entries are categorized as follows: reference works; organization and planning, including health manpower, organization and administration, planning, geographic distribution of health services, financial aspects, cultural aspects, and epidemiological, family planning, nutritional, and maternal child health studies; primary health care implementation, including rural inpatient care, rural outpatient care, mobile units and services, and community health education; primary health manpower training and utilization, including primary medical care, primary nursing care, primary family planning and midwifery, primary dental care, primary laboratory care, primary environmental health, and teaching aids; and formal evaluative studies in each of the subcategories listed under organization and planning. Author, geographical, and subject indexes are provided. Seven hundred entries are included.

Aydelotte Myrtle K
Iowa Univ., Iowa City. Coll. of Nursing.
Nurse Staffing Methodology. A Review and Critique of Selected Literature.
534p Jan 73 Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, $5.80.

Critical assessments of nearly 200 major methodological studies in the area of nurse staffing are presented, accompanied by a comprehensive bibliography of more than 1,000 such staffing studies. As a companion volume to a report of a conference on research on nurse staffing in hospitals sponsored in May 1972 by the Division of Nursing, Public Health Service, DHEW, the report also outlines the historical development of nurse staffing studies, provides a framework for classifying staffing methodology, and contains a glossary of terms used in staffing research. The literature review focuses on three major topics: (1) the relationship between the development of nursing service as an entity in itself and the growth of nurse training programs; (2) the establishment of standards for practice, education, and service; and (3) the evolution of other groups within the general occupations of nursing. The review reveals problems of definition of terms, of purpose, of qualification, and of utilization. Criteria for evaluation of staffing methodologies are suggested, and generalizations concerning the literature reviewed are offered. Two major deficiencies in the applications as of 1973 of work measurement techniques to studies of nurse staffing are noted: (1) the conceptualization of nursing practice derived from application of these techniques is limited in scope and character; and (2) data collection tools and procedures are 'markedly lacking' in objectivity, reliability, and accuracy.

Books, monographs, research reports and theses, reports and terms papers, guides, manuals, pamphlets, and periodical literature are included in the critiques and the bibliography.

Crockett Pernell W
National Technical Information Service, Springfield, Va.
Nurses: Manpower Supply, Needs, and Demand (A Bibliography with Abstracts).
182p Jul 78 Available NTIS NTIS/PS-78/0728/2

The bibliography cites studies on manpower distribution, resources in various settings such as hospitals and physician offices, and projected needs. Employment, recruitment, career patterns, and nursing resources planning are discussed. (This updated bibliography contains 176 abstracts, 55 of which are new entries to the previous edition.)

CSP Ltd., Ann Arbor, Mich.
Annotated Bibliography of Nursing Manpower Models.
42p Dec 76 Available NTIS HRP-0023568

This report is an update of the 1974 Vector Research Inc. (VRI) inventory of models directly or peripherally related to health manpower supply and requirements problems. It covers only models of the utilization of health services, demand for nursing personnel, and supply of nursing personnel. This update of the inventory includes a review of the literature since the ending date of VRI's review (1973) through June, 1975. The VRI report format was used in order to facilitate the inventory process and to provide continuity for anyone familiar with the original study. The model identification code includes: model identification, including descriptive title, developer's name, and references; general descriptors, including development status, purpose and sponsor, scope and subject, abstract, major outputs, and assumptions/constraints/hypotheses; and technical descriptors, including model type, model characteristics, data utilized, input variables, output variables, verification/applicability/reliability, and computer characteristics. The descriptive titles of the models included in this update are: nonmonetary factors in the demand for medical services; a model of health status in New Mexico; probabilistic models used to determine hospital service area; relationship of nurses' supply to salary changes; the short-run supply of nurses' time; substitution between registered nurses and licensed practical nurses by hospitals; monopsony power and the shortage of nurses; interactions among variables affecting hospital utilization; the impact of the extended-care facility benefit on hospital use and reimbursements under Medicare; and short-run supply

responses of professional nurses.

Delaney Frances M
International Development Research Centre, Ottawa (Ontario). Low-Cost Rural Health Care and Health Manpower Training. An Annotated Bibliography with Special Emphasis on Developing Countries. Volume 2.
182p 1976 Available from UNIPUB, Box 433, Murray Hill Station, New York, NY 10016.

The second volume in a series of annotated bibliographies on low-cost rural health care and manpower training brings together information on nontraditional health care delivery systems in remote regions of the world, particularly in developing countries. The literature abstracted focuses primarily on new models of health care delivery and on the training and use of auxiliary health workers. The bibliography is directed to persons involved in planning, operating, and evaluating rural health services, in training auxiliary health workers to deliver such services, and in supporting research into the problems of organizing and staffing rural health care delivery systems. The entries are grouped under five major subject headings: reference works; organization and planning (health manpower, organization and administration, planning, geographic distribution of services, financial and cultural aspects, studies of epidemiology, family planning, maternal and child health, and nutrition); primary health care implementation (rural inpatient and outpatient care, mobile services, community health education); primary health manpower training and utilization (primary medical care, nursing care, family planning, midwifery care, dental care, laboratory care, environmental health); and formal evaluative studies. Approximately 700 books, journal articles, reports, studies, surveys, and unpublished documents are abstracted. Author, subject, and geographic indexes are provided, as are order coupons for obtaining materials through the International Development Research Centre in Ottawa.

Department of National Health and Welfare, Ottawa (Ontario).
Canadian Health Manpower Studies: A Selected Bibliography, 1964-1975.
116p 1975 Available NTIS HRP-0009916

A bibliography on Canadian literature dealing with the health manpower field from 1964 to 1975 is provided. The annotated bibliography was compiled by the Canadian Ministry of National Health and Welfare to facilitate the exchange of information about health manpower activities among researchers, educators, planners, government officials, and other users. The references include task force reports,

council reports, doctoral dissertations, studies, and other significant papers which were derived through consultation with various institutions, associations, societies, and universities. The bibliography is arranged according to five health manpower categories: (1) organization and planning; (2) information and planning; (3) supply, requirements, and distribution (physicians, dentists, nurses, and allied health professions); (4) education; and (5) productivity and utilization. It is anticipated that the bibliography will be revised and updated on an annual basis to keep pace with the rapid proliferation of literature in the health manpower field.

Harrison Elizabeth A
National Technical Information Service, Springfield, Va.
Health Manpower (A Bibliography with Abstracts).
131p Dec 75 Available NTIS NTIS/PS-75/866/4

The selected abstracts cite studies covering training, utilization, planning, forecasting, evaluation, distribution, and standards as related to health manpower. The bibliography does not include allied health manpower. (This updated bibliography contains 126 abstracts, 40 of which are new entries to the previous edition.)

Harrison Elizabeth A
National Technical Information Service, Springfield, Va.
Health Care Facilities Legislation (A Bibliography with Abstracts).
104p Jun 77 Available NTIS NTIS/PS-77/0472/9

The selected abstracts of research reports on health care facilities legislation cover the following specific topics: Health care costs, construction, rate regulation, health manpower, rural health services, health planning and quality assurance. Also included is long term care, certificate-of-need, medical malpractice, financial management and administration. The health care facilities include hospitals, nursing homes, mental health facilities, health maintenance organizations, and extended care facilities. (Contains 99 abstracts)

Hicks Lanis
Missouri State Dept. of Social Services, Jefferson City. Office of Comprehensive Health Planning.
Health Manpower Planning. Volume II.
173p Apr 76 Available NTIS HRP-0016635

An annotated listing is presented of studies, reports, books, and articles received by the Office of Health Manpower

Planning, Missouri State Department of Social Services. The bibliography, a continuation of a listing produced in 1974 - 1975, divides the literature into the following categories: methods and procedures; population and area characteristics; health care needs, programs, and facilities; health manpower resources and requirements; health manpower employment, utilization, and regulation; education and training; information systems; and miscellaneous material. Materials are listed alphabetically by author within each category. A cross-reference section lists by author the materials in both volumes of the bibliography within the following manpower categories: allied health; dentists; general health planning; health maintenance organizations, group practice, and national health insurance; miscellaneous; needs and shortages; nurses; optometrists; pharmacists; physicians, medicine, and osteopathy; podiatrists; and veterinarians. Cross-referenced listings are not annotated. Most of the approximately 400 annotated listings cite materials published in the 1970's. The cross-reference section of approximately 800 listings also includes materials published in the 1950's and 1960's.

Medicus Systems Corp., Chicago, Ill.
Review and Evaluation of Nursing Productivity. Volume III: Literature and Research Review.
435p Nov 75 Available NTIS HRP-0015468

Selected papers, books, monographs, and dissertations relevant to productivity in nursing are revieved. Encompassing approximately 600 items screened from some 3,300 titles, the review is structured within a conceptual framework that models nursing productivity as consisting of input, technology, environment, and output components. Within the input component, the review touches on education, attitudes toward patient care and patient care personnel role, health manpower, emergency room nursing, intensive care and cardiovascular nursing, maternal and child health care nursing, occupational health nursing, operating room nursing, public health nursing, psychiatric nursing, clinical specialists, nurse practitioners, physician assistants, and geriatric care systems. The review of studies on technology discusses employment inducements, organization, administration, nursing leadership, unit management, team / primary nursing, nursing care and methods studies, patient classification systems, workload methodologies, staffing, scheduling, utilization, modeling, technical improvements, computer systems, systems analysis, drugs, nursing care plans and records, task performance and analysis, ambulatory care systems, and health maintenance organizations. Within the environment component, the review covers collective bargaining, motivation, research, interprofessional relations, nursing as a profession and a philosophy, health

care delivery, and economics. Output studies reviewed address absenteeism, turnover, job satisfaction, patient relations, quality of care, effectiveness, and cost analysis. A bibliography is included.

Miller Marianne
Applied Management Sciences, Inc., Silver Spring, Md.
Manpower/Population Ratios for Calculating Needs Standards.
90p 21 May 76 Available NTIS PB-254 310/6

The study is a literature review of over 200 articles and reports on health manpower requirements. To aid HSAs in their development of a set of guidelines for assessing local health manpower, the report identifies, describes and analyzes existing requirements/standards. The studies reviewed are those prescribing the appropriate supply of health professionals and include expressions of existing ratios plus normative judgements and emperical calculations as to what health manpower availability 'should be'. Eight major health professions are addressed including medicine and osteopathy, dentisty, pharmacy, optometry, veterinary medicine, podiatry, nursing and allied health. Speciality areas within the field of medicine and different types of nurses are also addressed. The first section of the report is a discussion of requirements ratios including a detailed table of the various requirements located in the literature. The report also has a section on recommendations for further research. Five appendices are also included in the report. (NTIS)

National Center for Health Services Research, Rockville, Md.
NCHSR Publications Report No. 5.
108p Mar 75 Available NTIS PB-259 817/5

The NCHSR Publications Report No. 5 is a cumulative listing of all reports published by NCHSR: general, technical, and auxiliary publications. Citations give author, title, performing institute, date, pagination, and ordering information by DHEW Publication No. and/or NTIS Report PB No. Most citations are annotated and accompanied by supplementary notes that enable the reader to decide if he is interested in obtaining the full report. This bibliography includes subject and title indexes and a list of conferences. These publications include state-of-the art and position papers, conference proceedings, books, monographs, and final and interim reports supported by grants and contracts sponsored by NCHSR and widely announced and distributed by DHEW, HRA, Scientific and Technical Information, Rockville, Md. and disseminated through The National Technical Information Service, an agency of the U.S. Department of Commerce, Springfield, Va. 22161 for ongoing availability to

the public when the NCHSR supply is exhausted. (NTIS)

Smith Mark K, Felix Jerome
Western Interstate Commission for Higher Education, Boulder, Colo.
A Directory of Nursing-Related Data Sources. Analysis and Planning for Improved Distribution of Nursing Personnel and Services.
156p Mar 77 Available NTIS NRP-0017087

References to over 60 major data sources pertaining to the study of nursing manpower and other related areas are presented with a view towards assisting health planners and researchers at the National, regional, State, and substate levels. The sources cited have two criteria in common: (1) they have data relevant to the study of nursing manpower; and (2) they include data that are applicable at the State or substate level for the entire nation. The kinds of information supplied for each source are: type and description of each source; the history, frequency, and latest edition of the survey or study; the methodology used for data collection and the universe of the study or those who supplied the information; and availability / accessibility of the publications, data files, or further information about the study or survey. In addition, references to guides and directories that were identified during compilation of this directory are provided, as are citations to publications of the National Center of Health Statistics and the Bureau of the Census. An annotated bibliography of publications that will be distributed by the Western Interstate Commission for Higher Education and the Division of Nursing, DHEW, is included.

Staffing 2: A Reader Consisting of Nine Articles Especially Selected By the Journal of Nursing Administration Editorial Staff.
47p 1975 Available from Contemporary Publishing, Inc., 12 Lakeside Park, Wakefield, Mass. 01880.

Nine articles on nurse staffing were compiled by the Journal of Nursing Administration editorial staff. The rotation of teams of airport personnel is compared with the rotation of individuals within nursing services. Scheduling difference is noted as one reason for the small strides achieved in applying small work group concepts to the delivery of nursing service at the unit level. In one study, it is shown that the extension of hospital management to the unit level is effective in relieving nurses of the responsibility for performing nonnursing activities. It is not demonstrated, however, that consistent and significant increases occur in the amount of time spent by nurses in the direct care of

patients following the implementation of a unit management system. Responsibilities of patient care coordinators are addressed, and the development and operation of a system for clinical advancement in nursing practice is described using Zimmer's conceptual framework. Reorganization of the nursing service department of University of Minnesota Hospitals is discussed. Reorganization took place through a process of planned change, with emphasis on staff participation and involvement. The concepts of responsibility, mutual attractiveness, integrative groups, and professional growth are used to point out the dimensions, as well the advantages and disadvantages, of a system of positions for the advancement of clinical nurses. A study on the quantification of nursing activities in a community nursing agency is described. The clinical ladder concept of appointment and promotion is examined for registered nurses employed by the nursing services of the University of California Health Care Facilities. A scheduling program developed by the Rochester Medical Hospital in Minnesota is described. The program, termed the 'premium day' concept, schedules full-time volunteers from nursing stations on weekends that have enough nurses to absorb an additional eight hours of leave every four weeks.

Staffing 3: A Reader of Eight Articles Especially Selected By the Journal of Nursing Administration Editorial Staff. 46p 1976 Available from Contemporary Publishing, Inc., 12 Lakeside Park, Wakefield, Mass. 01880.

Eight articles on nurse staffing were compiled by the Journal of Nursing Administration editorial staff. In a study of body rhythm effects on rotating work shifts, 39 nurses were observed for 18 days to note disturbances when they shifted from day to night duty and back again. On a physiological basis alone, research demonstrated that their biological clocks went out of phase in two ways: internal versus external time referents and internal balance of physiological rhythms. A method is reported for alleviating the problem of insufficient nurse staffing on weekends. University students are trained to deliver basic nursing care and are used to cover more than one unit. Capabilities taught, unit selection, and team management and control are discussed. In one program of the Department of Nursing of Cincinnati General Hospital in Ohio, a career ladder project was implemented to assist in solving nursing care problems. The project combines on-the-job training, paid tuition to local schools of nursing, and tutoring to provide career mobility for employees. The staffing system of the John C. Lincoln Hospital in Phoenix, Arizona is described. It includes an assessment of patient nursing care needs, flexibility in assigning staff so that nursing functions are carried out by personnel with appropriate knowledge and skill, and data

allowing for the compensation of overstaffing or understaffing. An associate director of nursing describes and analyzes the process by which nursing staff were involved in an experiment to introduce a modified work week in two pediatric wards at a teaching hospital. Findings are reported on the opinions of nurses about job satisfaction, staffing schedule preferences, and expressed advantages and disadvantages of the seven-day fortnight. The results of a study on physician opinions about nursing service before and after a three-month changed work schedule experiment on two pediatric nursing units are also presented. Improvements made in the scheduling of nurses and paraprofessionals at the Nebraska Psychiatric Institute in Omaha, Nebraska, are noted. A comprehensive study of a nursing staffing schedule is reported. The schedule involves two 12-hour shifts, with seven days on and seven days off, and has been used continuously since 1971.

Warstler Mary Ellen
American Nurses' Association, Kansas City, Mo.
Staffing: A Journal of Nursing Administration Reader.
62p 1974 Available from the American Jnl. of Nursing Co., 10 Columbus Circle, New York, N.Y. 10019.

Ten articles dealing with the concepts and mechanisms of staffing are compiled as an aid to nursing administrators. Topics covered are: (1) primary nursing as an organization that promotes promotional practice; (2) staffing for quality care; (3) management techniques for nursing service administrators; (4) cyclic work schedules and a non-nurse coordinator of staffing; (5) the reconstructed work week as an answer to scheduling dilemmas; (6) clinical staffing with a 10-hour day, four-day work week; (7) community nursing administration and the quantification of nursing utilization; (8) satisfaction of job factors for registered nurses; (9) job satisfaction and float assignments; and (10) maintaining the job performance of the aging employee. The article on staffing for quality care contains a categorization of the nursing care needs of patients; sample forms for 24-hour patient, area, and nursing service reports; and a sample chart for daily staff assignments. Sample forms also accompany the article describing cyclic work schedules, a technique that provides every other weekend off for nursing service employees while supplying full hospital care seven days per week. The article on the reconstructed work week describes a scheduling technique whereby the length of each shift is altered, the number of worked days is reduced, and a simple two-week schedule cycle alternating work periods with rest periods is employed. Other articles present a task analysis of community nursing activities; the reactions of 565 registered nurses to 16 job factors; and the attitudes of a sample of professional nurses concerning their float

assignments. In the job factor study, nurses indicated that factors of safety and security were of greatest importance to them, followed by social esteem and self-actualization factors; pay and personnel policies were of least importance. Supporting tabular data accompany these and other articles.

Weise Freida
Illinois Univ. at the Medical Center, Chicago. Library of the Health Sciences.
Statistics and Health Planning.
24p 1975 Available NTIS HRP-0013425

A selected, annotated bibliography is presented of statistical publications, monographs on health planning, and bibliographies and indexes pertaining to health planning. The statistical publications are categorized under the following headings: demographic; general medical care; health facilities and services; health manpower; and vital and health statistics. These publications are presentations of health-related data, not discussions of data gathering and analysis techniques. The health planning monographs concern such subjects as health care delivery in rural areas, health planning, national health care policies, management uses of health services data, statistics for comprehensive health planning, planning for nursing needs and resources, and guidelines for producing uniform data for health care plans, among others. Most of the materials cited were published between 1970 and 1975. Approximately 130 publications are listed, including several with particular relevance to health planning in Illinois.

AUTHOR INDEX

Abernathy W J 146, 199
Abernathy William J 73
Akhtar Shahid 199
Alabama Council of Directors of Nursing Service 1
Alabama Regional Medical Program 1
Altenderfer Marion 121
Amenta M M 73
American Nurses Association 2, 157
Anderson Rhonda 45, 118
Anderson Ronald G 160
Applied Management Sciences Inc 74
Areawide and Local Planning for Health Action Inc 121
Arkansas State Health Planning and Development Agency 157, 158
Arp Selma 45, 118
Association of Operating Room Nurses 122
Auld M G 2
Aure Beverly 2, 123
Aydelotte Myrtle K 75, 200

Badour Geraldine 123
Bahr James 123
Bailey Kathryn E 124
Bain R Joyce 57
Baloff N 146, 199
Baloff Nicholas 73
Barker Betty L 37
Barnum Ronald A 3
Barrett James P 3
Baxter W Eugene 76
Bellmore Mandell 25, 61, 98
Bennett Carl A 64, 149
Bergan Tom 76
Bergen Thomas J 53
Bergman Rebecca 77
Berry D M 3
Bihldorff J P 4, 78
Birt Joyce 53
Boam T V 78
Boger Robin Z 125
Boyarski Robert Philip 4
Boyd Ronald P 176
Boydston Gordon D 36
Brandt Josephine A 124
Brayton James B 5, 79, 125
Brekke Donald G 126
Brightman I Jay 70
Brown Grace E 37
Brunner Nancy 40, 111
Bryant Sandra 5
Buckley Mortimer J 37
Bueker Kathleen 6
Bureau of Comprehensive Health Planning 127
Bureau of Health Manpower 127
Bureau of Health Resources Development Div of Nursing 7
Bureau of Labor Statistics 54
Butler A M 79

Cady Lee D 27, 101
Cales Alice D 79
California Nurses Association 128
Callon Helen F 7, 128
Camberg Lois 129, 130
Cameron J McL 83
Cavaiola Lawrence Joseph 55
Central Arkansas Planning and Development District Inc 130, 131
Cetrulo Mary Frances 173
Chance Helen 16
Charles S T 80

Charter Diane 80
Chi Systems Inc 81
Church Olga 45, 118
Ciske Karen L 131
Clark E Louise 81
Cleveland R 17
Cochran Jeannette 82
Coggeshall John H 8, 83
Cole Roger B 159
Coles Leland 191
College of Virgin Islands St Thomas Div of Nursing Education 132
Comprehensive Health Planning Agency of Southeastern Wisconsin Inc 8, 49
Comprehensive Health Planning Agency of Southern New Jersey 133
Comprehensive Health Planning Association for the Metropolitan Portland Area 55
Comprehensive Health Planning Association of Imperial Riverside and San Diego Counties 133
Comprehensive Health Planning Association of Western Pennsylvania Inc 9
Comprehensive Health Planning Council of Northwestern Pennsylvania Inc 134, 135
Comprehensive Health Planning Council of South Florida Inc 136
Comprehensive Health Planning Council of the Big Bend Area of Florida Inc 136
Computer Sciences Corp 49
Cooley P C 170
Cooper George E 160
Corn Florence 9
Costello Raymond M 10
Coulton Mary R 11, 137
Crandall Lee A 184
Crockett Pernell W 201
Crompton H Margaret 83
Crowley David 64, 149
CSF LTD 84, 201
Cultice James M 155
Curry Wesley 137
Curtis C 84
Curtis Edna M 150

Dahl G L 11
Daly Dennis 85
Dartmouth Medical School Dept of Community Medicine 138
Dean Charles R 85
Delaney Frances M 202
DeMarco James P 86
Department of National Health and Welfare Ottawa 202
Derr Duane 82
Dewitt Brent 62, 100
Doyle Timothy C 160
Duffus A J 12
Duncan Paul 184

East Central Alabama Areawide Health Planning Council 138
East Central Michigan Comprehensive Health Planning Council 139
Ebert Paul A 37
Eckhoff Constance M 150
Economic Development Association of Eastern Montana 140
Edgington Philip W 10
Efurd Nancy 32, 150
Eidson Ron 11
Elliot Jo Eleanor 87, 140
Elliott Rebecca 141
Ellis Barbara 87

Elpern Ellen Heid 12
Emerton Audrey C 141, 161
Ernst Marvin 56
Erwin W Frank 13
Esposito Nancy T 45, 118
Eusanio Patricia L 87

Feldman Janet 57, 142
Felix Jerome 206
Ferrara A 18
Fine Ruth Barney 88
Finlayson Hal 13, 88
Foley William J 152
Fredrickson Lola I 181
Freund Louis F 89, 106, 107
Friesen Quinton J 147
Froebe Doris J 57
Fuller Mary E 143
Fulop Tamas 143

Gabbert Charles C 89
Ganong Joan M 144
Ganong Warren L 144
Ganti Annajee R 20, 95
Gargantiel Carol W 144
Gaul Kenneth E 50, 90
Genesee Region Educational Alliance for Health Personnel Inc 145
Georgette Janet Kinney 14
Giffen Martin B 10
Gildseth Wayne M 126
Gillot M 80
Gingras Pauline 146, 161
Giovannetti Phyllis 15, 91
Gordon Benjamin B 3
Gordy Jack R 176
Goronsky Daniel W 162
Gray Robert 162
Graulich Mark G 160
Grigorieff Paul 163, 164, 165

Hahn Margot 9
Hall Dorothy C 92
Hambleton B 15
Hanson Robert L 15, 93
Harman Ronald J 93
Harris R E 20
Harrison Edwin T 144
Harrison Elizabeth A 203
Hartwell T D 170
Hathaway Ann 165
Hay Donald G 58
Hayden R L 171
Health and Hospital Planning Council of Northeastern Pennsylvania 165
Health Facilities Planning Council Inc 59
Health Planning Association of the Central Ohio River Valley 59
Health Planning Council for Central North Carolina 166
Health Planning Council Inc Health Manpower-Nursing Committee 167
Health Planning Council of the Jacksonville Area Inc 167
Hershey J C 146, 199
Hicks Lanis 203
Hill Helen L 123
Hinshaw Ada Sue 16
Hirsch Gary 76
Hirsch Gary B 109
Home Nursing Agency of Blair County 50
Horoshak I 17
Human Services Administrative Systems 168
Hundert Mark 57, 142
Hutchins C 17
Hutchinson Joseph 105
Hymovich Debra P 17

Illinois State Dept of Public Health 60, 94

Indiana State Dept of Mental Health 18, 95
Indra R 18
Inland Counties Health Systems Agency 18
Iowa Regional Medical Program 19, 168

Jakubauskas Edward B 169
Jenkins A L 19
Jensen M R 20
Jennings Carole P 61
Johnson Jo 20, 95
Johnson William Clint 21
Jones D C 170

Kalb R 196
Kaplan Robert S 96
Kearns Jeanne 87, 140
Keaveny T J 171
Kell Diane 171
Kirtane Mohan 96
Kitsap County Comprehensive Health Planning Council 171
Klein Denise A 184
Kneedler Julie 97
Kodadek Sheila 172
Krewson Lyle R 187
Kunstel Frank 173
Kuykendall LuVerne 89

Lampton T D 176
Larrabee Jean 40, 111
Lauer Esther Schaefer 97
Laufman Harold 37
Lee J M 21, 98
Lehman Merrill W 147
Leonhard Gregory 100, 174
Lepper Kathleen 9
Leszkiewicz John 149
Levine Eugene 21, 22, 23, 98, 173
Levine Harry D 24
Lewis Amber T 25
Liebman Judith S 25, 61, 98
Lillesand Kay 99
Lindsay Wardell 62, 100
Linkous C Ted 173
Litman Theodor J 62
Livengood Lindsay 147
Long A 26
Lum Jean 100, 174

Magenis James E 26
Maierrot C 100
Maine's Regional Medical Program 63
Manders Kenneth R 10
Marciante F Anthony 37
Markowitz Walter L 50, 90
Marram Gwen 148
Mason Elizabeth S 27
Mathews Laura L 99
Mauksch Ingeborg G 89
McCabe Susan 17
McCaffree Kenneth M 64, 149
McCarthy Cathy 175
McCartney Richard A 27, 101
McConnel E 28
McCullough D M 175
McKague Laverne 15, 91
McKee Barbara 27, 101
McKnight Eleanor M 64
McMillen M 46
McNally James K 101
McPhail A 4, 78
McWhirt F D 28
Medicus Systems Corp 204
Meyer Diane 102
Meyer Randall W 175
Michigan Department of Public Health Bureau of Health Facilities 28, 29
Mid-Coast Comprehensive Health Planning Association 65
Miedema A 170
Miller Elizabeth A 103
Miller Holmes E 103, 104
Miller Marianne 205
Milliken Gary M 149
Milliken Ralph A 149

210

Mills E Wayne 176
Mills Richard 104
Minetti Robert 105
Missouri State Dept of Social Services Office of Comprehensive Health Planning 177
Mitchell H 83
Moffett Thomas 173
Moore James B 176
Morrison William H 108
Morrow Gloria 64, 149
Munroe W G 70
Murnaghan Jane H 65

Nagy Emil J 20, 95
National Center for Health Services Research 30, 106, 205
National Center for Health Statistics 177
Nebraska State Dept of Health Lincoln Office of Comprehensive Health Planning 178
Nenner Victoria Corich 150
New England Board of Higher Education 179
New Jersey Dept of Higher Education 179
New Jersey Dept of Higher Education Office for Health Manpower 180
NY - Penn Health Planning Council Inc 182
Nield Margaret 31
Norby Ronald B 106, 107
Norod Elizabeth F 181
North Carolina Medical Care Commission 31, 181

O'Connor Thomas J 32, 150
Ohio Commission on Nursing 183
Oklahoma Interagency Task Force for Health Manpower Data 183
Orange County Health Planning Council 33, 66
Oreglia Anthony 184
Orneaux Susan Des 108
O'Sinski Elsie G 108

Paetznick Marguerite 33
Palm David 185
Pardee Geraldine 34
Patterson Dorrie 34, 185
Patterson Margaret B 17
Payne R 4, 78
Pelofsky Brenda 175
Pesut Robert N 3
Petersdorf R G 151
Peterson Evelyn T 181
Peterson Grace G 124
Phelan Lee P 173
Phillip P Joseph 24
Pierskalla William P 103, 104
Pinel C 35, 66
Plummer Johanna 35, 108
Prawda Juan 118
Public Health Service Div of Nursing 186
Puente Joseph Dela 23
Pullman Robert A 53
Pushkin J 26

Rath Gustave J 104
Regional Health Planning Council of the North Central Texas Council of Governments 67
Reid Richard A 51, 151
Rhode Island Dept of Health Providence Office of Comprehensive Health Planning 186
Rhodes M 36
Robbins Martha H 187
Roberts Doris E 52
Roberts Edward B 109
Roth Aleda V 188
Rudlin M 26
Ryan Joseph R 36
Ryan Tula 37

Sainato Helen K 6
San Joaquin General Hospital 188
Sauer K 189
Sauer Ken 163
Savitsky Elaine 197
Scanlon R 4, 78
Scannell J Gordon 37
Schneider Donald P 152
Schneider Jack M 2, 123
Schneider Sandra L 10
Seay Audrey B 38
Segall M 189
Seriki C 35, 66
Siegel Stanley 23
Silber T 46
Simborg Donald W 39, 152
Simpkins Don 89
Simpson R 39
Smith Carol A 39
Smith Eunice Lawrenz 112
Smith Gordon C 162
Smith L D 110
Smith Mark 163
Smith Mark K 206
Smith W Allen 67
Snavely Shirley A 86
Snowe Robert J 41
Solberg Andrew L 189
Somers June B 110
Sorkin Alan 190
Southeast Arkansas Economic Development District Inc 190
Sparks Robert D 191
Stackler Louis M 191
Starr Sheldon 192
Statewide Master Planning Committee for Nursing and Nursing Education 192
Stevenson Joanne S 40, 111
Stiles Jr George 193
Stokes Nancy Doyle 17
Strilaeff Florence 111
Sullivan Donald J 26
Swanberg Gloria 112
Swanke Ferne 89
Szczechowski W 46, 153

Teitelman Peter W 194
Thrane Judith M 124
Thurman Richard L 41
Tien James M 113
Tilquin Charles 113
Transaction Systems Inc 41, 42
TransCentury Corp 68, 114
Tri-State Area Health Planning Council Inc 42

Underwood Alice B 43, 114
University Hospital Hospital Systems Improvement Program 115

Valley Hospital Ridgewood NJ 43
Vector Research Inc Public Health Service Div of Nursing 195
Verran Joyce 16
Verzi Martin A 116
Veterans Administration Dept of Medicine and Surgery 116

Wagner Barry 107
Walden Alice R 188
Walsh P A 44
Wandel Sten Erik 117
Ward A R 118
Warner D Michael 45, 118
Warstler Mary Ellen 208
Weber Basin Health Planning Council 195
Weise Freida 209
Werner June 45, 118
Western Interstate Commission for Higher Education 119
West Michigan Comprehensive Health Planning Unit 196
Wilczynski Jerome B 46, 153
Wilder J F 196
Wiley L 28
Williams T Franklin 68

Wilson Kirke 197
Wingate M B 46
Winn Sharon 64, 149
Wisconsin Dept of Health and Social Services 69, 153
Wolfe H B 100
Wollard Douglas K 47, 154
Wong John C 197
Wood Elizabeth 197
Wright Phyllis 38
Yeager Robert L 70
Yett Donald E 155
Young John P 25, 61, 70, 98, 120
Yuter Sheila 189
Zeccardi J 46
Zegeer Louise Jimm 156
Zilberbe J S 71

ADDENDUM

Public Health Service, Hyattsville, MD. Div. of Nursing.
Methods for Studying Nurse Staffing in a Patient Unit--A Manual to Aid Hospitals in Making Use of Personnel.
226p May 78 Available from Superintendent of Documents, Washington, DC 20402.
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